THE ADMIRALTY'S SHIPBUILDING ADVISERS. See p. 512.
BRITISH MOTOR-DRIVEN CANAL TUGS AND BARGES (Illus.) See p. 519.

SHIPBUILDING AND SHIPPING RECORD

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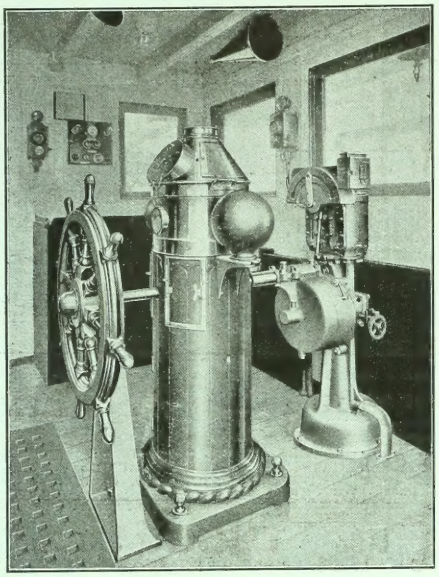
Alphabetical Index of Advertisers, Page 38. 3 w. Classified Index to Advertisements, Page 33.



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VOL. X.] THURSDAY, NOVEMBER 29, 1917. [No. 22.

CONTENTS.

EDITORIALS:
Shipping Controller's Powers..... 509
Coal for Italy..... 509
Delays to Shipping..... 509
An Unusual Total Loss Case..... 509
Reduction in American War Risk Rates..... 510
Beira and Delagoa Bay..... 510
British Shipping and Neutral Orders..... 510
Iron and Steel for Japan..... 510
A Demurrage Claim..... 511
Port Authorities and Shipbuilding..... 511
The 12½ per Cent. Award..... 511
Straight-Sided Ships..... 511
Reversing Gears for Turbines..... 511
The Admiralty's Shipbuilding Advisers..... 512
The Improvement of Small Craft 512
Electrical Propulsion of Ships..... 513
Publications Received..... 514
Trade Publications..... 514

ILLUSTRATED:
Motor-Car Repair Workshop..... 515
Lake Steamers for Ocean Service... 516
British Motor-Driven Canal Tugs and Barges... 519

MISCELLANEOUS:
Securing Greatest Output of New Ships..... 514
Life of Water-tube Boilers..... 516
Scottish Institution of Engineers and Shipbuilders..... 521
The New Shipbuilding Council..... 522
Purchase of Clyde Engineering Works..... 522
Special Look-Out Men for Merchant Ships..... 522

GENERAL NEWS SECTION..... 523

SHIP SALES..... 531

SHARE TABLE..... 532

NATURALLY the steps which the Shipping Controller is taking to adjust the situation brought about in the requisition of liners by Mr. Justice Bailhache's decision, engage the close attention of Parliament. Sir L. Chiozza Money, the representative of the Ministry of Shipping, stated last week that the Shipping Controller had received from the liner owners assurances that the former undertaking which they arrived at with him would be adhered to. But this arrangement for the services of owners proceeds on the basis of voluntary negotiation and not upon harsh bureaucratic command. Sir L. C. Money anticipates that there will be no difficulty in carrying on the business of running the ships in the national interest. But for this the Government has to thank the patriotic sentiments and public spirit of the leaders in the shipping industry. On one point the representative of the Ministry of Shipping speaks now in a chastened spirit, in contrast with his former tone. He was asked by Mr. Runciman and Mr. Holt to state the policy underlying the fixing of rates of freights charged to exporters and importers. He replied that it was to make them cover the cost of running the ships only and nothing more. It was the implied assumption of the right to retain the profits and at the same time to utilise the management services of owners that gave rise to the litigation which happily has set limits—not unduly—to the powers of the Shipping Controller. Certain politicians have fostered the idea that shipping profits ought to be more heavily taxed than those arising from other industries. That idea is intolerable.

Shipping Controller's Powers.

Britain has certainly been generous towards Italy in the matter of coal supplies, and if prices in that country have soared the British shipowner is not the person who has profited. It is only fair that the facts of the situation should be made clear. Last week Sir L. C. Money made a statement in the House of Commons which required amplification on Monday. On the first occasion when he answered Mr. Houston, he stated that coal was being sent to Italy in requisitioned British ships. Its average cost f.o.b. was about 30s. a ton, and hire and expenses represented a freight of about 17s. 6d. The cost of coal delivered at an Italian port might be taken at 50s. 6d., exclusive of war risk, borne by the Italian Government. On Monday, however, Sir Leo stated that the war risk represented as much again. It appeared that this coal delivered to the Government of Italy under these conditions amounted to less than half the quantity imported into the country. The balance was carried at market rates of freight, which in the case of neutral vessels were as high as 185s. per ton. The balance of coal which was spared by the Italian Government for private consumption was not more than 25,000 tons a month, and the fixed price for this was 215s. a ton. It is the duty of our Government to make it plain that this state of things is in no way due to British shipping, or indeed to the British Government.

Coal for Italy.

Whilst the tonnage problem has been exercising the minds of Government officials in all the belligerent countries, it is rather surprising that more has not been heard of the question of delays in unloading and loading of vessels in port. It is obvious that a vessel which spends a day longer in port than is absolutely necessary represents so much tonnage lying idle. That delays are unavoidable cannot be gainsaid, and when one considers the shortage of labour both at the docks and upon the railways—the railways being so intimately linked with the working of every port as to constitute an integral part of it—it is perhaps a cause for wonder that vessels are able to enter and clear from ports with the speed they do, but that in many instances of delay the cause has been entirely due to lack of organisation or to bad management, nobody with any knowledge of the working of our great docks will deny. It is, therefore, a matter for congratulation that the Shipping Controller has appointed Mr. Arnold Trinder, who is well known in the City as a member of the firm of Trinder, Anderson & Co., shipowners and brokers, to investigate all causes of delay affecting British and Allied vessels, whether requisitioned or not, and also all cases of delay affecting neutral vessels engaged in Allied trade. Mr. Trinder has much practical knowledge of the loading and discharging of steamers, and owners are therefore likely to find that immediate and strong action will be taken when delays which might have been avoided are brought to his notice.

Delays to Shipping.

The insurance market has recently settled a total loss which presents several unusual aspects. The lost vessel was posted as missing early in the year, and at the time the loss was presented for settlement most underwriters had her in their books as a missing vessel, while in many cases the view was held that the loss was possibly due to a war peril. The facts of the case, however, when eventually ascertained, precluded this last possibility, as will be seen from the following brief detail.

An Unusual Total Loss Case.

The vessel was last spoken safe off the coast of this country. A short time after, wreckage, together with the bodies of some of her complement, were washed ashore at a place considerably north of her destination. No cause of the loss being apparent, the vessel was posted as missing with the consent of the owner. The claim was presented to the leading underwriter, who asked for a legal decision before settling the claim, and an action was therefore arranged, but before it reached the Court the wreck was located. A diver was employed and reported that on inspection he could find no trace of damage which could be attributed to a mine or torpedo. The action was therefore abandoned and the loss has been collected on the marine policy. It will be noted that until the discovery of the wreck itself the general impression was that a war loss was possible, if not probable, in this case, and the underwriters on the marine policy were practically unanimous in considering her a case for arbitration on this basis. The clearing up of the matter may be of considerable assistance in the future, for until the cause of loss was definitely established to have been a marine peril, the case was an excellent example of those which are now only too common, where a doubt exists as to whether the loss is attributable to a marine or war peril.

Reduction in American War Risk Rates.

It would be interesting if the reason of the American War Risk Insurance Bureau for reducing the rate on Atlantic voyages from 5 per cent. to 4 per cent. could be revealed. It will be remembered that only last month the rate was reduced from 6½ per cent. to 5 per cent. and the rapidity with which the subsequent fall of 1 per cent. followed is not without an element of surprise. It may be that America is convinced that the future will show so great a reduction in the number of war losses that the figure at which the rate stands is considered adequate. It may be that with the closer national control of shipping which is now being exercised in the United States, the retention of the war risk insurances on American vessels has shown itself desirable. If this is the case, there is little doubt that the purpose aimed at is being achieved. The amount of business coming to the British market on war risks from America has dwindled rapidly since the latest reduction. The current rate in the open market on this side is firm at five guineas per cent., and underwriters are displaying no inclination to compete with the American Bureau on its latest terms. Nor, since America is now our ally, is there the same necessity for retaining this business, which was a national asset before the United States discarded neutrality. It must not be forgotten, however, that the income of war risks premiums which flowed to this country from thence in the past were valuable in no small degree in maintaining our credit, and in consequence the rate of exchange, while the readiness with which the British market was accepted as security by American underwriters cannot have been without effect.

Beira and Delagoa Bay.

Rumour has, of late, been busy with the future of the two principal ports in Portuguese East Africa, or the Mozambique Province as it is perhaps better known. At Beira, which is the natural and only gateway to a vast hinterland, and which is particularly advantageous in regard to Rhodesian traffic, it is proposed to construct a deep-water wharf, so as to obviate the necessity of vessels having to discharge and load cargo into lighters in mid-stream, and also to complete the railway connection with the Zambesi. It is, in fact, hoped to make Beira worthy of its unique position as the apex of a series of trade routes, spreading fanwise from the Limpopo to Tanganyika. So far as concerns Delagoa Bay, the Transvaal Mozambique Convention expires on April 1 next, and already opposition is developing to a renewal of the agreement in its present form. Since Portugal entered the war, it has been felt that the differentiation of Delagoa Bay from the rest of the other South African ports is a hardship on merchants and forwarding agents, the bulk of whose business is with the Rand. The contention now is that there should be no more difficulty in exporting or importing through Delagoa Bay than through, say, Durban. Under the existing treaty traffic is restricted.

British Shipping and Neutral Orders.

In a way, we are not sorry that the Newcastle Chamber of Commerce rejected Mr. Dalgleish's resolution on the subject of the neutral orders for ships recently placed in this country, although we dissent from the view taken by one or two members who opposed it, that it made it appear as if British owners desired special treatment. It is not to desire special treatment to contend that a duty of the State is to see that no important section of the trading or manufacturing community is, by the action of any other State, placed at a disadvantage in competition with the traders or manufacturers of that other State. By taking so much more of the British owner's war profits than the Governments of some neutral countries are taking from their owners, the British Government is handicapping our shipping industry to a highly dangerous extent. There is no doubt about that, as anybody may see for himself who cares to go into the facts, and we, therefore, wish our Newcastle friends the best of luck in their efforts to put public opinion right on the point. We dislike the resolution, and are not sorry it was rejected, because its basis is wrong and ungenerous to the shipbuilding industry. Rested on the foundation which we have indicted, namely, that British shipowners have a right to fair play, Mr. Dalgleish's plea is sound and convincing. But when as a further prop the booking of neutral contracts by British builders is cited, the shipbuilding industry is slighted and, to that extent, the owner's case is weakened. None of the things which it is feared builders will do could possibly happen, even if they were of a mind to do them. The solution of the owner's problem is less State control of shipbuilding than it is relaxation of the State's financial policy towards shipping, and it is odd that shrewd men like our friends on Tyneside should ignore it and prefer to concentrate on any other line.

Iron and Steel for Japan.

According to cable advices from Tokyo, negotiations with America for steel have been suspended. This, naturally, is a serious matter for Japanese shipbuilders, who are at present almost entirely dependent upon outside sources for materials, any interruption in the supply of which will delay, if it does not stop the greater part of, the big programme they have in hand. To-day there are thirty yards, with about 94 slips, available for the construction of ships of over 1,000 tons, as compared with seven three years ago, and, therefore, the demand for iron and steel, which were obtained chiefly from Great Britain and the United States in pre-war times, has correspondingly increased. We hear, however, that great efforts are being made to produce the necessary materials in Japan, although, of course, it is not likely that they will be in time to overcome the difficulties that have arisen. Two new steel works are to be established in the vicinity of Yokohama, the Asano concern and the Japan Steel Pipe Factory. The Mitsubishi Engine and Iron Works, Nagasaki, and the Kawasaki Dockyard Co., Kobe, also hope soon to fulfil their own requirements. In addition, two iron companies are being formed, the Tokai Kogyo Kaisha, at Wakamatsu, and the Fuji Seiko Kaisha. Moreover, the Nippon Kotetsu Kaisha has invited subscriptions from the public for the extension of its plant, and the Toyo Seitetsu Kaisha recently increased its capital, and bought an extensive site at Kyushu, where it is hoped to produce at least 170,000 tons of pig iron a year. Mention may also be made of the gigantic Kuhara scheme at Tokuyama, near Shimonoseki, whilst we also hear of Japanese enterprise of the kind in Korea.

Some interesting aspects of the law relating to the discharge of cargo and demurrage were discussed in the Scottish Courts last week.

A Demurrage Claim.

Lord Salvesen had before him a claim brought by Rickinson, Sons & Co., of West Hartlepool, owners of the steamship *Arachne* against the Scottish Co-operative Wholesale Society for demurrage owing to the detention of the vessel at Leith in discharging. The bill of lading contained the provision that the cargo was "to be received at destination as fast as steamer can deliver during ordinary working hours any custom of the port to the contrary notwithstanding." This obligation must be construed with reference to the circumstances existing at the time when the discharge took place. Lord Salvesen, however, held that the cargo owners were not entitled to say, having entered into engagements with several steamers which fell to be discharged at the same time and which they could not have met in normal times with fairness to the vessels chartered, that they were prevented from performing their duties as consignees by circumstances over which they had no control. That proposition is common sense. On a review of the discharging facilities available he found that demurrage at the rate of £125 a day was payable in respect of 15 days.

Shipping interests do not, as a rule, take kindly to heavy expenditure by port authorities on provision for shipbuilding and engineering industries whose requirements are far in excess of their own normal needs. Their idea is, of course, that if money were not spent in that way the effect would be cheaper ports from their point of view. Up to a point the argument is sound. The authority which overspends on provision for shipbuilding and engineering will surely come to grief, for if its undertaking proves dear in the shipping sense the ships which are its main source of revenue will go elsewhere. Past a certain point, however, the argument begins to halt. Port authorities have, strictly speaking, to consider not the particular interests of shippers and shipowners, nor the particular interests of shipbuilders and engineers, but the interests of the whole community in the maritime district of which their undertaking is the sea gateway. The balance is a delicate one correctly to maintain—more delicate, perhaps, in some places than in others. But authorities which take the broad view of their duties and responsibilities, such as that taken by Sir Thomas Mason, the Chairman of the Clyde Trust, need have no fear of failure. Sir Thomas clearly foresees that if the Clyde is to play its proper part in the reconstruction of our mercantile marine, the Trustees will have to revise its pre-war estimates of the consideration which is due to shipbuilding and engineering and their subsidiary industries. That means, we take it, bigger docks, deeper water, wider channels, and more fitting-out facilities. If these are provided, the Clyde's riverside industries may be depended upon to do "the rest," to the considerable enhancement of the prosperity of the whole district—and incidentally also to the great improvement of the standing and financial stability of the Clyde Trust.

Port Authorities and Shipbuilding.

The trouble which has arisen over what is known as the 12½ per cent. award illustrates the evil, to which we referred a week ago, of allowing several State Departments, instead of only one, to deal with Labour affairs. Originally the increase was given to certain skilled time workers whose total weekly wages compared unfavourably with those of high-earning semi-skilled pieceworkers with whom they were associated. Whether the question of granting that increase should, or should not, have been referred to the Committee on Production is a point which it obviously would now be futile to discuss. But there is not much doubt that a great deal of time, friction, and money would have been saved if, instead of extending the scope of the Order, the Ministry of Munitions had then thought of availing itself of the services of the Chief Industrial Commissioner. So great a variety of other time workers, not only in engineering but also in shipbuilding, applied for the increase, and created so many difficulties because it was not immediately conceded to them that the matter had in the end to be referred to the War Cabinet. The War Cabinet's decision will not have the immediate effect of allaying the unrest, though eventually it should, seeing that it concedes practically the whole point. All skilled, semi-skilled, and unskilled engineering, foundry and shipbuilding workers, who are pure time workers, are to get the 12½ per cent. Time workers, who have a bonus for full time-keeping, are also to get it. Premium bonus workers and other pieceworkers are not to get it, although, where their base times or piece rates do not yield an amount equal to 12½ per cent. over the day rate they are to have the option of going on time. It is suggested, however, that to avoid any undesirable effects on output, a better plan would be suitably to revise bonus base times and piece rates. The claims of clerks and staff men and women are to be referred to a new Joint Departmental Committee which will also consider claims sent in by any other class of time workers who think that they are entitled to a bonus. As Sir George Askwith is to have something to do with this new tribunal its setting up may safely be said to be the most satisfactory of the new developments. His experience qualifies him, at any rate, to get the business out of the sad tangle into which it has been allowed to drift.

The 12½ Per Cent. Award.

In our issue of September 13 we referred to the subject of straight-sided ships and indicated that the attention of shipbuilders had been directed to the possibility of saving the bending of frames and to the easier construction of vessels on this principle. We said that from the purely practical standpoint the idea was worthy of consideration, but that the result of experimental investigation in the Michigan tank had indicated that the square-bilged ship might have excessive resistance. In the light of later development and investigation we are led to believe that this is not necessarily so, and that it is possible to incorporate the practical advantages of this system with a form as good as can be obtained with ordinary bent frames. Unfortunately we cannot, at this stage, make public the interesting investigations that have been undertaken, nor indicate the full scope of the practical advantages to be obtained by the suggested methods of construction, but we are of the belief that a radical change in the design and building of cargo ships will be an event of the near future. If the position of Britain as the shipbuilding centre of the world is to be maintained the best designs and methods of construction must be adopted, and it is satisfactory to know that the future holds some interesting features in store. If, with improvement in design, the step is also taken of employing electric welding to largely supplant the present system of riveting, the shipbuilders of this country will give a lead which we feel sure will soon be largely followed.

Straight-sided Ships.

Engineers are aware of the great disadvantage that the steam turbine labours under in view of the fact that it cannot be reversed. It must not be assumed that the production of a reversible turbine is, from the nature of the case, impossible, for the introduction of gearing in connection with marine turbines not only suggests a means whereby a single turbine may be utilised for driving the vessel either ahead or astern, it suggests also the possibility of designing a turbine capable of developing a large power, and capable also of being driven in either direction. At present, however, the reduction gear seems to point to the simplest method of attaining the end in view, and already we have heard of reversible reduction gears wherein a small pinion wheel, which runs idle when the vessel is being driven ahead, is lifted into mesh between

Reversing Gears for Turbines.

the pinion wheel on the turbine shaft and the gear wheel on the propeller shaft, with the result that the latter runs in the opposite direction. Whilst the controlling mechanism for such a device will have to be capable of exerting large forces, especially with units of large power, and whilst other mechanical difficulties readily present themselves, it certainly would appear as if in the development of this idea we may eventually solve the problem of the reversing of the propeller when the vessel is turbine-driven until such time as the reversible turbine is itself forthcoming.

THE ADMIRALTY'S SHIPBUILDING ADVISERS.

At the moment, shipbuilding's particular misfortune seems to be that some critics of the Admiralty's control take the rôle of critic much more seriously than others, and, unhappily, the most severe of them habitually include the Ministry of Shipping in their condemnations. The result is that criticism comes from many angles, and that almost anything is esteemed to be a valid pretext for asserting that we are, in a shipping sense, going headlong to the dogs with the Department of the Deputy Controller for Auxiliary Shipbuilding in the van.

For instance, on Friday it was announced in several newspapers that owing to a difference with the Government as to the best means of replacing ships which our enemy Fritz is, in his cultured way, torpedoing, the Merchant Shipbuilding Advisory Committee had resigned. The conclusions drawn by the writers varied, although they agreed in the degree of their pessimism, which was very low indeed. We shall deal hereafter with the justification, or lack of it, for the pessimism. The immediate point we desire to make is that in all the stories, the resignation of Sir George Carter and his Committee was associated with the gloomy fears of the critics. It is true that the members of the Merchant Shipbuilding Advisory Committee resent the establishment of national yards, while private yards are without adequate supplies of labour and material; all private shipbuilders and engineers, as a matter of fact, resent the action, and we do not blame them for it. A great many contractors also believe that the standardised ship policy is a mistake, but the members of the Advisory Committee—not all of them, at any rate—are not amongst them. A majority, if not the whole, of the Carter Committee, not only approve the re-organisation, but while they were in association with the Ministry of Shipping, worked hard at its details.

While, however, these things are as they are recorded, they had really nothing to do with the Committee's resignation, and, strictly speaking, ought not to have been associated with it by gloomy or other critics. The Committee resigned because it had ceased to be useful as an Advisory Committee, and for a considerable time before last week's "crisis" it was fairly common knowledge that it intended to do so. The Deputy Controller never consulted it—asked for its advice, that is—about any of the details of the national yards nor did he seek its opinion on other important matters such as alterations in the requirements for the standard ships. A Merchan Shipbuilding Advisory Committee ought, of course, to have been consulted on all these points, and, largely because this one was not, its members, like sensible men of business, assumed that it had ceased to be useful.

The fact that, with the exception of Mr. Rowan Thomson, who is now Director of Machinery for Auxiliary Shipbuilding, they have accepted seats on the new Council which is to be set up, proves that they have not been, and are not, unwilling workers in the national interest. The new body is to deal with both naval and mercantile shipbuilding. That is, on its face, an improvement, because, with each branch in a sense organised separately, there was always a grave danger of friction. It will, obviously, also be an advantage to have the headquarters' staffs of both Deputy Controllers, as well as the Admiralty organisation behind them, in intimate touch with representative contractors. But in estimating the prospective effect of the new arrangement in the output of merchant ships, it will be wise not to forget that much depends on the view taken by the Board of Admiralty itself. At present it unmistakably considers better progress with merchant ships to be vitally necessary. If that was its opinion in the latter part of 1916 and the early part of this year, its actions can only be regarded as odd, for its representatives claimed and obtained priority for all naval work no matter what other interest suffered.

Circumstances are easily conceivable in which other than purely naval interests must necessarily suffer. Everybody is agreed about that. But with supplies of material and labour steadily improving, circumstances of the kind indicated must become rarer, and whether the progress made with the Shipping Controller's programme is satisfactory or otherwise will depend on the way the Admiralty's officials at Whitehall and in the districts interpret their duties. If everybody concerned in the production of every kind of ship does his best, we have no fear that the prognostications of the gloomy critics will ever be justified. That is not to say that we believe the prospect is without a peril; on the contrary, we fear that it is full of perils. What we mean is that if everybody gives of his best in criticism as well as in work, we ought to achieve our objectives—in other words, produce ships up to the estimated requirements. And nobody outside of the War Cabinet could hope to do better than that.

THE IMPROVEMENT OF SMALL CRAFT.

Not the least important of the many problems in industrial efficiency, is that dealing with local transport. Vessels from overseas bearing the raw materials for manufacturing industries are discharged often at great distances from the exact locality where the raw material is required; commodities for foreign markets are manufactured inland and must be transferred to the seaports for shipment abroad. That the railways are capable of dealing rapidly with a large volume of this traffic goes without saying, but for non-perishable goods there is no question but that water transport is always the cheaper. Hence there has grown up in recent years a steadily increasing volume of trade around our coasts and upon our inland waterways. The coastal trade is of a totally different nature from the canal trade, although perhaps both methods are available for transport of goods between two specified places; but whereas, if the material is transported by sea, vessels capable of withstanding the effects of storms and rough seas are required, for inland traffic the frailest craft, provided it is watertight, can be employed. Nevertheless, whilst the problems of supplying suitable craft for these two diverse systems of transport are so vastly different from one another, the problem of the improvement of existing craft of both types is, strangely enough, the same. The great drawback to the employment of local waterborne transport has been that the time taken is generally much greater than when railway transport is utilised, and any attempt to improve the former must of necessity be directed towards the reduction of the time taken.

Considering first of all the coastal trade. It will be found that whilst in one or two specified trades steamships are employed in this class of work, such as the coal traffic and the fish traffic, quite a large proportion of it is still carried on in small sailing craft, and, even where steamships are employed these are nearly always of small dimensions, and fitted with engines of such power that only low speeds are possible. Since the value of a vessel can be measured by the number of complete voyages it can make per annum, it will be apparent that if by the employment of machinery of higher power, rendering higher speeds possible, the time of each round trip can be materially reduced, the earning capacity of the vessel will be greater other things remaining the same. The difficulty has been, however, that more powerful machinery, *i.e.*, larger boilers and engines, have required more space, and in consequence the hold space and therefore the earning capacity of the vessel is reduced, the economical

compromise being reached with vessels of such power that the speed is somewhere in the region of eight knots. But the advent of the motor engine would appear to have changed all that. In the internal-combustion engine, working on the Diesel cycle—or on the semi-Diesel cycle for the smallest coasting vessels—we have a source of power occupying but a small space, capable of utilising almost any kind of crude oil, simple to manage, and particularly suited for the development of small powers; in short, exactly the type of engine required for small coastal vessels. Hence it may be asserted that in the future there should be a wide and profitable field for the employment of moderately sized coasting vessels fitted with oil engines of sufficient power to give them a speed of at least 12 knots. One other factor will be essential for the efficient employment of this means of transport, and that is, means for rapid handling of the cargo at the terminal ports.

Turning next to the improvement of the type of craft used upon our inland waterways, we are faced with the fact that at least as far as size is concerned development is impossible. The size of craft is fixed to a large extent by the size of the canals, the locks and the tunnels through which the canals pass, and save in the case of new canals, which could, of course, be built upon more generous lines, any improvement in speed must be accomplished without any increase of dimensions of vessel. That existing types of barge can, however, be fitted with small engines, capable of rendering them far more speedy than the horse-drawn barge, is shown by the barge illustrated and described on page 519 of this issue, and so that barges not fitted with engines may still be utilised, but at a far greater speed than hitherto, tugs of extremely small overall dimensions, and fitted with powerful engines, as described in the article referred to above, may be employed. Again, it may be remarked that it is the internal combustion engine which has rendered this development possible, and though of smaller size than for coastal vessels, it is the same type of engine, viz., the oil engine, that is utilised. But there is another source of power available for use on inland waterways, which could not be employed on coastal vessels. Electricity has already been utilised both in this country and abroad, and it possesses amongst many others, the advantage of not giving off poisonous gases such as are given off in the exhaust of oil engines, and which, upon canal systems where the tunnels are long, may render the employment of oil engines impossible. Two systems of electric propulsion have been employed, one in which a storage battery carried on a barge gives electrical energy to a motor or motors driving propellers or operating a winding gear, and the other in which energy is obtained from an overhead wire by a method very similar to that adopted on many tramway systems. Neither of these systems have been developed to any great extent, but both are capable of being economically employed in any great scheme of rapid canal transport. Finally, in view of the urgency of the problem of local transport, it is necessary that the various schemes outlined above, and many others which tend towards cheap and rapid transit, should be earnestly studied, that we may be well equipped for the struggle for industrial supremacy which the future will undoubtedly bring.

ELECTRICAL PROPULSION OF SHIPS.

THE fact that the Naval Authorities of the United States Government have decided to equip the large battle cruisers with electric motors for driving the propellers has riveted the attention of naval and marine engineers upon the problem of electrical propulsion. It must not be forgotten that these battle cruisers are to be equipped with machinery capable of developing no less than 180,000 shaft horse-power; and when one considers the very few vessels previously equipped with the electric drive, the short time that this system of propulsion has been known, and the magnitude of the experiment—for it cannot be described as anything but an experiment—now being attempted, it will be realised that this system of propulsion must indeed possess considerable advantages over all others to have thus found favour with the engineering advisers of the United States Navy.

The ease with which the electric motor may be controlled and reversed, renders it particularly adaptable to the driving of a ship's propeller; but save for the smallest vessels where a storage battery was carried, the difficulty of efficiently generating the electrical energy on board ship for supplying to the motors had rendered the commercial application of this system of propulsion impractical. It was not until the steam turbine had proved itself to be so vastly superior to the reciprocating engine for the economical development of large powers that marine engineers, faced with the two great drawbacks of the steam turbine for ship propulsion, viz., its high speed and its non-reversibility, and searching for a suitable means whereby they could utilise the steam turbine without its inherent disadvantages, hit upon the idea of employing the electric motor as a reduction gear between the high speed turbine and the slow speed propeller, and incidentally giving it, in addition to the advantage of easy reversibility, a flexibility not possessed by the better known system of mechanical reduction gearing.

Attention was first focussed upon the subject in this country in September, 1911, when the late Mr. H. A. Mavor read a paper before the British Association upon the subject of "Electric Propulsion of Ships," in which he described the system as applied to vessels of different types. In his paper Mr. Mavor described the arrangement of the machinery as it was then proposed to instal it upon the now famous United States naval collier *Jupiter*. This vessel was subsequently built, and it is claimed that the experience gained with the success of this vessel has led up to the adoption by the United States Naval Authorities of the system on the new battle cruisers. The *Jupiter* is a vessel of 20,000 tons, the main engine of which is a single six-stage Curtis turbine running at 2,000 r.p.m and direct coupled to a two-pole three-phase generator, which supplies current at a pressure of 2,200 volts to two motors direct coupled to two propellers. The motors have 36 poles, so that the ratio of synchronous speed reduction is 18 to 1, giving the propellers a speed of 110 r.p.m., which drive the vessel at 14 knots, the output of the propellers being 5,600 shaft horse-power; and on trial under these conditions the consumption was found to be 12 lb. of steam per shaft horse-power. It is especially interesting to note that the total weight of the propelling machinery of the *Jupiter* is 166·5 tons, whilst in the *Cyclops*, a sister ship of the *Jupiter*, but equipped with reciprocating engines, the weight of the machinery is 260·8 tons.

It is often urged that whilst in view of its flexibility and its economy at other than full speed, *i.e.*, at cruising speed, the electrical drive is particularly suited to the propulsion of warships, for the propulsion of merchant vessels—fast passenger liners, cargo boats and the like—it has no great outstanding advantages which indicate that it is vastly superior to the mechanically geared turbine. In this connection it may be pointed out that the conditions obtaining on the *Jupiter* approximate very closely to those obtaining in the merchant service, and that whilst it is easy to provide for an economical cruising speed with the electrical drive, no such provision is made—nor is it required—on the *Jupiter*, and it would be unnecessary to make provisions for this on a merchant ship, all that is required being facility of manœuvring when coming in and out of harbour and high economy at full speed. That this economy is obtained can be shown by considering the figures actually obtained on trials of the *Jupiter*, or, by the results obtained with the ss. *Mjolner*, which on trial was found to have a coal consumption of 1·036 lb. per shaft horse-power, as against 1·798 lb. per shaft horse-power on the ss. *Mimer*, a sister ship fitted with reciprocating engines. It should be pointed out that the *Mjolner*, whilst having electrical reduction gear, is fitted with Ljungstrom turbo-generators, and that the remarkable economy obtained may be due in a certain degree to the well-known efficiency of this type of turbine, but the

figures quoted, and the other facts mentioned above, are interesting enough to make the investigation of the merits of the electric drive worthy of the closest and most careful study.

PUBLICATIONS RECEIVED.

[A short notice of any publication does not necessarily preclude the subsequent appearance of a longer review.]

The Year-Book of Wireless Telegraphy and Telephony, 1917.—London: The Wireless Press, Ltd., Marconi House, Strand, W.C. Representatives for Scotland: James Brown & Son, 52-58, Darnley Street, Glasgow. 928 pages + cxv, with numerous illustrations and diagrams and one map. Price, 3s. 6d. net.

Although the war has compelled the editors of this very useful year-book—which now makes its fifth annual appearance—to limit the matter in the reference section, devoted to "call letters," and other particulars relating to land and ship stations, the information set forth has been, as far as possible, brought up to date, and is thoroughly reliable. It has, however, been found necessary to expand the volume in other directions, consequent upon the development and progress in radio-telegraphy and telephony during the past year. For instance, a number of British Dependencies and foreign countries have amended their laws and regulations relating to wireless telegraphy, and the subject has accordingly been carefully revised and brought up to date. Again, Dr. J. Erskine Murray has taken the definitions of terms current amongst radio-telegraphists in Great Britain, and also the definitions of terms as set forth by the Committee on Standardisation of the American Institute of Radio Engineers, and produced a unified table of definitions which should find acceptance on both sides of the Atlantic.

Of special interest and value to navigating officers and marine engineers is the section in which is given in full the 74 articles of the International Convention on the Safety of Life at Sea; whilst the list of wireless telegraph stations of the world, and the list of the world's ships so fitted, together with particulars of the installation and the service, should also be of value.

Articles have been contributed by prominent writers, some of these dealing with subjects of general interest, such as "The Wireless Drama," by Alfred Noyes, an essay in which the author details some of the brave deeds performed by wireless operators during the war; and others dealing with special subjects of technical interest by leading authorities such as Dr. Fleming and Dr. Eccles. There is a useful bibliography tabulating the books and periodicals published in all countries upon the subject of wireless telegraphy, and a dictionary of technical terms in five languages, which should prove of special value. A large folding wireless map of the world is inserted at the end of the volume. This is a duplicated Mercator projection, showing Australia and the Far East, as reached by both Eastern and Western routes, and it has been improved in this edition by the indication in red of those stations which are open for ship and shore communication.

TRADE PUBLICATIONS.

[Copies of any of the publications mentioned in this section will be sent on application to the firms by which they are issued.]

Parsons' Marine and Stationary Oil Engines.—The Parsons Motor Company, Ltd., Town Quay Works, Southampton, in issuing a new edition of their illustrated catalogue of marine and stationary oil engines, state that although the existing circumstances preclude the possibility of carrying out any work other than that necessary in the prosecution of the war to its fullest extent, they have found it imperative to publish a new catalogue, not only for the guidance of the many Departments of the British and Allied Governments and authorities with whom they are so much concerned in contracts at the present time, but also for their own use and for export trade where possible.

The catalogue contains a list of the various types of engines built for both marine and stationary work in sizes from 7 h.p. to 90 h.p., giving approximate weights and overall dimensions of each type, as well as lists of spare parts and details, and is coded throughout to facilitate ordering. In addition, it contains a section giving instructions for installing and running these engines, in which will be found many useful hints upon such subjects as lubrication, ignition, &c.

SECURING GREATEST OUTPUT OF NEW SHIPS.

A representative deputation of employers and workmen engaged in shipbuilding was received last week by the Prime Minister at Downing Street, when they placed before him their joint suggestions as to the best means for securing the greatest possible output of new ships. The deputation was introduced by Mr. A. Wilkie, M.P., of the Ship-constructive and Shipwrights' Association, and the joint proposals were put forward by Sir George Carter, representing the employers, and by Mr. J. Barker, of the Boilermakers' Society, representing the trade unions.

The Prime Minister in the course of his reply said: This is quite a unique deputation, and may well mark a very important step forward in the industrial relations of this country. It is a deputation of the leading employers and of the workmen's leaders to press upon the Government certain considerations which involve joint action between employers and workmen. That in itself is an event, and an event of very considerable significance. It is one of the most encouraging features in the prosecution of the war, because without a good understanding between the employers and the workmen the prosecution of the war becomes very difficult. It is a matter for considerable gratification that a desire should be expressed by employers and workmen for the setting up of some—I will not use the word Tribunal—body representative of both, which will be an efficient instrument in the settling of all difficulties and disputes. Naturally you do not want to bring these up to Government Departments if you can settle them amongst yourselves, for the simple reason that a settlement made by the workmen and the employers is in itself, from the fact that it is a settlement made by them, a settlement which indicates a more perfect goodwill and satisfaction. I hope this is the beginning of very big things in the way of getting a better, a more complete, and a more permanent understanding between the employers and the workmen in the vital industries of the country; because, without that understanding, there is nothing but trouble, distraction, and loss of production. That we cannot afford. We are fighting for our lives. We have terrible struggles on land before us; but if we are secure on the seas, well, to use a phrase, we have "got them"; they cannot escape us. We have got them in a deadly grip, and knowing the character of the people of this country as I do, they do not let go once they have started. That is their historical character, and the German knows it. He is aware that our grip is a deadly one, once we begin, and he is trying to unloosen it. He is attempting to get us at what he considers is the most vulnerable point, namely, our communications on the seas. He will not succeed; but it depends very largely on you employers and you leaders of the men, and you can only get the best results by good will and co-operation and by throwing the whole of your energy and strength into the task.

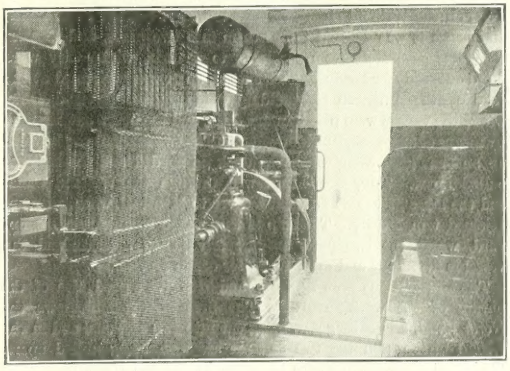
I cannot tell you how cheered I am . . . by the fact that you have come here to say: "We want to work together, we want to settle our disputes amongst ourselves, and we want the Government Departments to cease overlapping and to assist us to do the work." That is the way in which we will win, and I want you especially to try to prevent the little disputes which concern neither the employer nor the Government—little disputes between various trades on questions of demarcation—from stopping the work. You know it is a great misfortune that it should happen. It really does not matter to you whether a carpenter does the work or a joiner does the work. But there are little things of that kind happening, and the great thing is that somebody should do the work and should do it without any loss of time. Therefore, I want you to use the influence of your great unions to prevent disputes of that kind interfering with the output.

MOTOR-CAR REPAIR WORKSHOP.

A motor-car travelling workshop, with electric arc welding and air-compressor equipment is the newest aid to rapid work for engineers' repairs. For ship repairing these motor cars are specially useful. The installation in the petrol-electric driving and power vehicle is very complete; and most metals can be welded by the arc process, the principal being cast iron, steel, copper and brass, also aluminium. Fractured pipes, shafts and wheels, are made whole on the spot without loss of time; flanges are welded to wrought-iron pipes; iron plates are fixed together, and the broken teeth of gear wheels replaced. Uncaulkable plates in boilers can be welded and cracks in flanges and flues made good.

Exterior View of Travelling Repair Workshop.

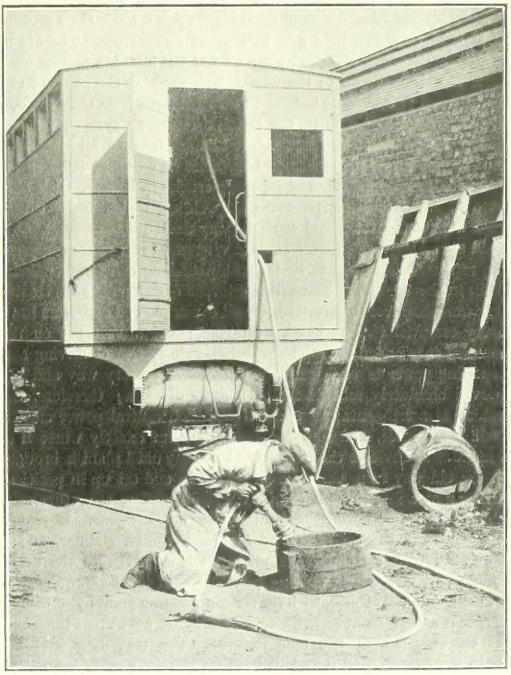
The car has a businesslike appearance, it contains a workshop and an operators' messroom, and is planned for economy. The body is of the box type, provided on the near side with hinged glass windows for lighting and ventilation, and on the off side with one window and louvres for ventilation. Mahogany panels give an attractive look to the vehicle. The driver's cab is boarded up on the off side with a hinged door on the near side. At the back of the



Interior View, showing Boreas Air-Compressor.

cab, folding doors give the driver access to the welding control gear so that he can operate that from his seat. As regards the chassis it is a standard 40-h.p. Tilling-Stevens petrol-electric one, fitted with special wound dynamo and motor for arc welding purposes. The petrol engine is direct coupled to an electric generator, which supplies current to an electric motor, and this in turn drives the back axle through Cardan shaft and worm gearing. The car and equipment were turned out at the Maidstone Works of Tilling-Stevens, Ltd.

One great advantage this mobile workshop has is being on the spot with all equipment and workmen very speedily when urgent repairs are wanted. No plant is delayed in transit and work begins the moment the car arrives. Not only is there the arc welding apparatus, but power is provided for driving pneumatic tools, such as chipping hammers, riveting hammers, drilling machines, grinders, and sand-blast apparatus. Switch gear is arranged for diverting the current from the electric driving motor to the arc welder—that is, the power supplied by the same engine and dynamo which normally propels the car. This double-duty arrangement is readily carried into effect by the driver and is a most economical method of fulfilling two distinct purposes. Petrol-electric propelling is stated to be the cheapest system of driving a motor car, and the



Air-Compressor operating Boyer Chipping Hammer.

travelling workshop can cover a long mileage on a stated quantity of petrol, the cost per mile averaging very favourably with any other motive power.

When the car drives up, connections are made with the cable terminals running to the point where the arc is required for welding. In the process of welding with carbon electrodes the head of the operator is enclosed within a helmet with coloured glass front to protect the eyes from damage from intense light. Care and skill are shown by the trained operators in handling this very modern and effective method of welding, which permits of engineering repairs being carried out and iron or steel reinforcing introduced that would not be possible by other means.

When the air-compressor is wanted the plant can operate a No. 1 Boyer chipping hammer at a distance of 500 ft. from the vehicle.

The Boreas air-compressor delivers about 30 cubic ft. of free air per minute at a pressure of 100 lb., and is driven by a 5½-h.p. petrol engine. Special attention is paid to the cooling of this plant. A receiver of ample capacity is slung from the roof and a water-tank is affixed underneath the floor of the body of the car. The armoured hose is stored in this four-wheeled movable workshop in 50 ft. lengths, fitted with instantaneous couplings.

The different methods of using the carbon and the metallic arc may be described. The carbon is held by the operator in a holder and the arc is made between the rod and the work by lightly tapping with the carbon, and drawing the arc out to a length of about 1½ in.; this heats the work to a point of fusion. This method is used for cutting up plates, burning risers and fins of large castings, cutting up scrap iron, and demolition work generally. Welding is done by heating up the work to be welded to a molten state, holding small pieces of scrap material or metal rods in the arc, which are then fused and unite with that part of the work raised to a welding heat.

With the metallic arc the carbon is replaced by a metal electrode of suitable material for welding the particular work the operator is at, and coated with a flux to prevent oxidisation. The arc is struck in the same manner as before and the metal is carried over from the electrode on to the work. The work at the point of the arc is raised to a welding heat and the metal flows from the electrode and unites with it. With the metallic electrode system, vertical and overhead welds are made. It can be used in all classes of repair, viz., filling up cracks or blow-holes in castings, building up worn journals on shafts, and repairing cracks in boilers. It is also used in manufacturing processes for welding tanks, boiler tubes, pipe work and sheet metal work of every description.

In actual work this motor car is of very great service for engineering repairs, and is in use by large shipbuilding and ship-repairing firms in this country. The Tilling-Stevens design makes the travelling workshop readily available for all demands, and operators have every essential tool at hand, while the power is switched on the moment it is called for. The petrol-electric system of driving and repairing power is exceedingly satisfactory in every way and has proved absolutely reliable for all classes of work; therefore, the vehicle is a self-contained and self-propelled central power station on a small scale, and supplies electric current exactly where it is wanted. It obviates the necessity of waiting until plant is brought in the old way from the engineering works and set up in position, and can at a moment's notice be wheeled round to any other suitable location, a marked advantage for quick repair. Moreover, the inside of the car is spaced in craftsmanlike manner, and is furnished with all appliances ready at hand, even to the useful bench and vice. The welding gear is staged in the front portion of the car on the off side, with the air-compressing plant fitted behind. There is a convenient locker seat extending for about half the length of the car. Experience tells the value this travelling workshop is to the owners, and it can be used for purposes other than those mentioned, such as temporary lighting.

LIFE OF WATER-TUBE BOILERS.

It is frequently urged that one of the great disadvantages of the water-tube boiler is its short life in comparison with the fire-tube type, such as the ordinary Marine or Scotch boiler. As a comment upon this assertion, it is of interest to quote from the report of the recent naval operations round Oessel, in which the Russian gunboat *Hcabry* particularly distinguished herself. This vessel was built in 1896 and fitted with Niclaussé boilers, which have thus been in service for over 20 years. The report as quoted in the Paris *Temps* of October 18 states:—

"On October 14, at 4 p.m., one of our patrols, comprising four torpedo boats and two gunboats, cruising in the Soelo-Sund Straits, was fired upon by a German Dreadnought from the west of the Straits. Our torpedo boat *Grom* sustained serious damage. Shortly afterwards, under cover of the Dreadnought's fire, 12 German torpedo boats of the largest type, followed by others, forced the Soelo-Sund. Our patrol engaged with these vessels, and in the course of the fight the gunboat *Hcabry*, under violent enemy fire, made two attempts to take the *Grom* in tow, protected by other of our torpedo boats making a determined attack on the enemy, who was firing particularly on the *Hcabry* and *Grom*. Aboard the latter vessel, all the guns were put out of action and a serious fire started. The towing ropes then gave way owing to the heavy seas running. However, in spite of violent enemy fire the *Hcabry* once more approached the *Grom* and tried again to take her in tow, but without success. After which, part of the crew of the *Grom* were taken on board the *Hcabry*, whilst the torpedo boat sank. At the same time the *Hcabry*, keeping up a violent fire, sank an enemy torpedo boat. Shortly after the other torpedo boats came to our assistance and the enemy vessels cleared off. Our losses on other vessels were insignificant. The Admiral of the Fleet recorded the energy and vigour of the gunfire and splendid courage exhibited by the crews of our gunboats and torpedo boats—particularly the *Hcabry* and *Khivinetz* and the torpedo boats *Vabiaka*, *Pobtenitel* and *Constantin*, who engaged with all their strength against a numerically superior enemy. According to witnesses, two enemy torpedo boats were destroyed and two others seriously damaged."

When it is remembered that the boilers of the gunboat *Hcabry* date from 1896, and that for more than 20 years the vessel has been in continuous service, it is remarkable that the steaming equipment should have been able to hold out so well and stand up against these conditions. There are vessels in H.M. Navy and also numerous vessels in the French and Italian Navies which have had Niclaussé boilers for upwards of 15 years and more, and are still doing good service, and—we are informed—even now, only a very small percentage of spare tubes are required.

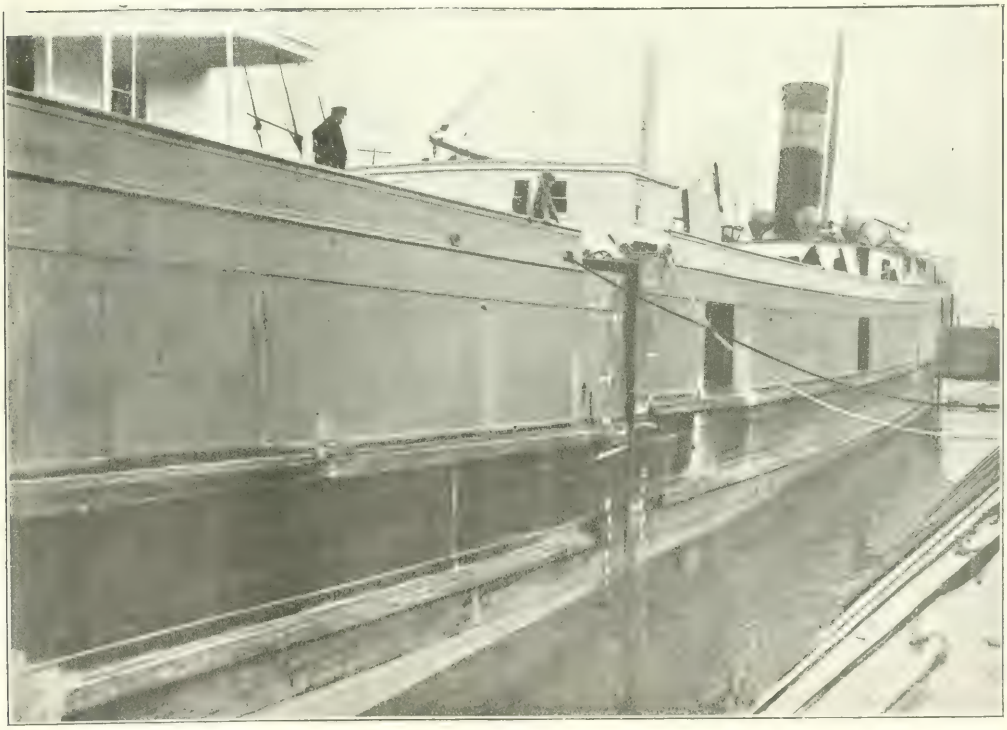
LAKE STEAMERS FOR OCEAN SERVICE.

One of the many methods being adopted in the United States for meeting the urgent need of ships for transatlantic service is to convert the cargo vessels previously used on the Great Lakes for deep-sea work. In putting this idea into practice many difficulties had to be overcome, one of the greatest of which was the transferring of these vessels from the lakes to the Atlantic. It was found that the locks on the Welland Canal were far too short to take these boats, and hence it was decided to cut them into two parts, and transfer the parts separately from the lakes to the sea, where they were fitted out ready for service. This cutting apart was performed at the yard of the American Shipbuilding Company, at Cleveland, Ohio, where the vessels were placed in dry dock, and the plates cut through by means of oxy-acetylene blow pipes. The two sections are boarded up and caulked, after which the dock is flooded and the sections pulled apart. They are then towed through the Welland Canal and the lakes of the St. Lawrence River to Montreal, where they are rejoined temporarily. The ship is then taken to an Atlantic shipyard, where the two parts are properly joined together and the vessel is fitted out and made ready for ocean service.

The illustrations on pages 517 and 518 give a good idea of the nature of the work involved. The first photograph shows the *North Wind*, a lake freighter, being cut into two sections, and in the second photograph the two sections are seen being pulled apart. The third photograph shows the stern half of the *North Wind* after the bow section has been drawn away. The wooden bulkhead erected to keep the afterpart free from water can be plainly seen. The last photograph depicts the process of fitting the two portions together again. Holes are drilled through the large diamond cover plates and through the hull before the ship is cut in two, and upon the arrival of the two sections at Montreal, the sections are placed together again and the plates are found to fit accurately in position.

TRANSFERRING LAKE STEAMERS TO THE ATLANTIC.

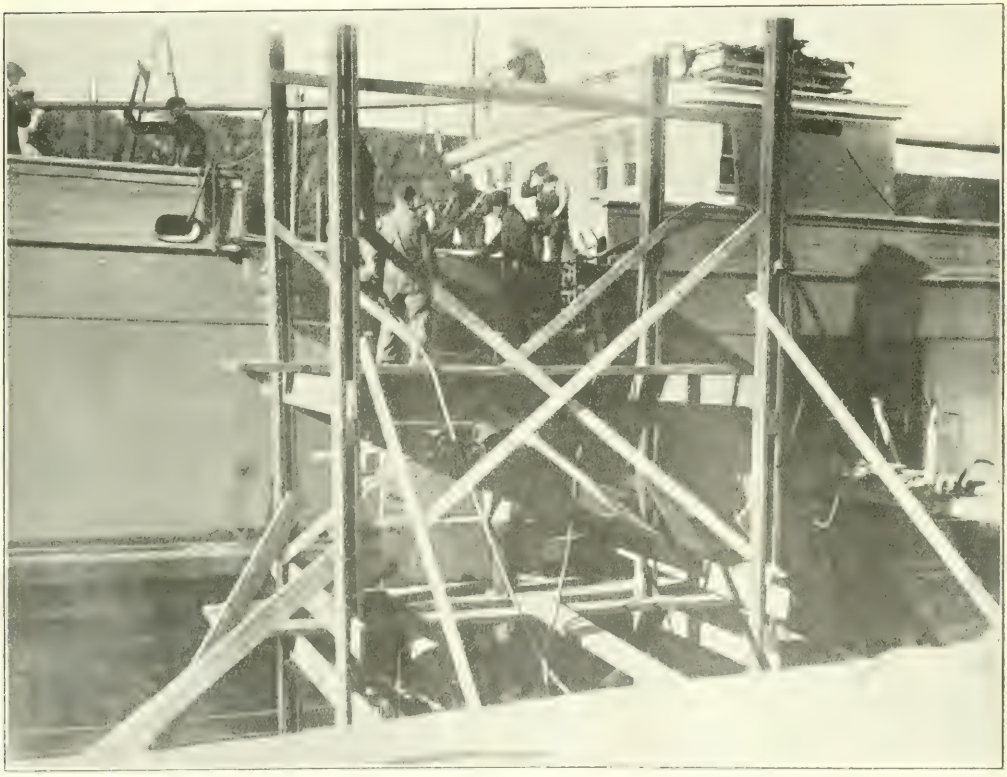
Adjusting the Sections prior to joining.



Bringing the Sections together.

TRANSFERRING LAKE STEAMERS TO THE ATLANTIC.

The Stern Half of the "North Wind."



Joining the Sections together again.

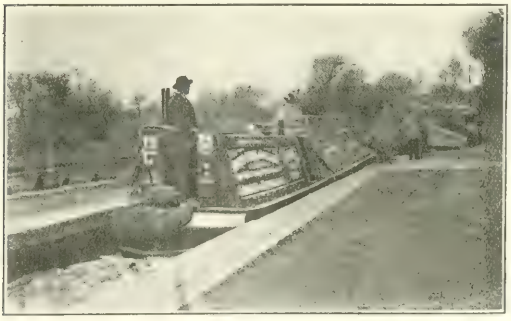
BRITISH MOTOR-DRIVEN CANAL TUGS AND BARGES.

The question of the inland water navigation of this country is at the present time arousing a considerable amount of interest. This is mainly due to the fact that owing to the enormous amount of congestion on the railways, canal traffic can compete favourably in the way of transit of goods to and from the main industrial centres of the country. Unfortunately the British canals have been neglected considerably of late years and have been allowed to drift into a derelict condition in a large number of cases, the result being that they are now unfortunately in a hopeless state, being choked with weeds, or, owing to the lock gates being decayed, containing no water in certain parts. This latter condition is well illustrated in the canal which runs from Southampton to Winchester, which in parts is completely dry.

"Vera IV" entering the Locks.

At the present time, however, considerable efforts are being made in certain quarters to revive the trade on the existing canals which can be navigated, and many new boats are being put into commission, together with old boats, which are being fitted with motors.

The type of boat which is mostly in use on the British canals is what is termed the narrow or monkey barge. Owing to the restrictions imposed by the locks, these boats are of standardised dimensions, being about 70 ft. in length, with a beam of 7 ft. and a draught of 3 ft. 6 in. Formerly these boats were horse-towed, but the advent of the heavy duty motor has revolutionised this, and at the present time the most up-to-date canal carriers are owners of large numbers of motor-driven barges.



"Vera IV" passing through Locks.

The general arrangement of a typical motor-driven monkey barge is shown on page 520. The general dimensions are 70 ft. overall in length, 7 ft. extreme beam and 4 ft. depth over planking. She is capable of carrying 20 to 25 tons of cargo on a draught of 3 ft. 6 in. It will be seen that the greater part of the vessel is occupied by the cargo space, the machinery being arranged at the after end of the hold. The crew are accommodated in a small cabin arranged abaft the engine-room. The restrictions imposed by the locks, bridges and the canals themselves make it extremely difficult for anything like roomy accommodation to be arranged for the crew on one vessel; this is especially noticeable when compared with the accommodation usually fitted on the barges in use on the Continental canals, which in most cases is extremely good. It must be remembered, however, that these boats always work in pairs—the motor barge towing a butty barge on which there is a cabin—and so altogether there is ample room for the crew, which generally consists of a man with his wife and family, which numbers from three to as many as seven or eight persons. The total deadweight therefore carried in the two boats is usually $25 + 30 = 55$ tons. The hull of the vessel is constructed of wood, the bottom being of 3 in. English elm boards laid transversely. The frames, knees, stem and sternpost are of English oak of good quality, grown to shape. A pitch-pine keelson, 10 in. sided by 4 in. moulded, is fitted on the centre line, in the hold and motor space. The motor casing is of steel, together with a 12-in. coaming which is worked round the hatch.

The general features of this class of vessel are well illustrated in the photographs of the barge *Vera IV*, owned by Smith, Stone & Knight. The vessel is seen entering and passing out of the locks whilst travelling on the Grand Junction Canal. This boat, together with the *Premier*, also illustrated on this page, were built by Mr. W. H. Walker, of Frogmore Wharf, Rickmansworth, and are engined by Perman & Co., Ltd., 82-83, Fenchurch Street, London, E.C.3, with their British Kromhout marine oil engines. Incidentally, Messrs. Perman have the distinction of fitting up the first canal boat in this country to be propelled by means of an internal-combustion engine.

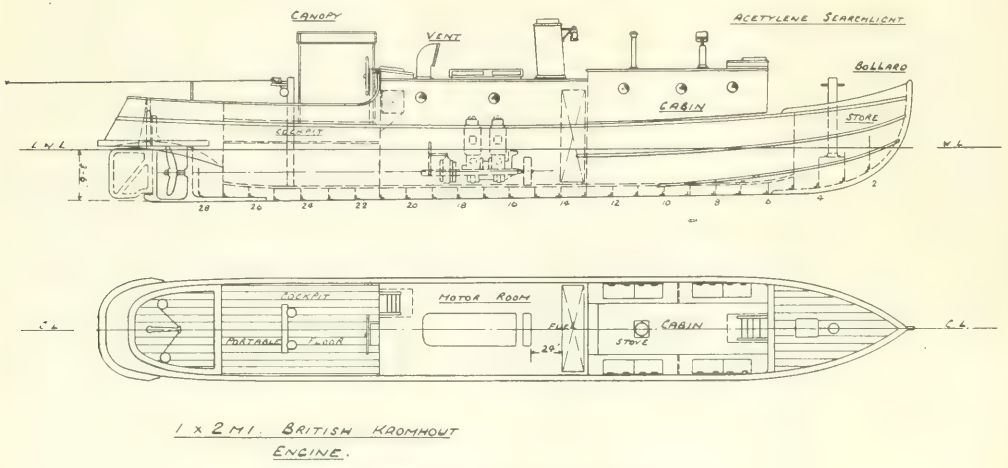
The engines used in the barges (illustrated on page 521) are all of the same model and develop 20 b.h.p. at 425 r.p.m. The "Kromhout" motor has already been described in these pages, so it is not proposed to go into the matter again at the present juncture. The speed of the boats when fully loaded, and with a barge of a similar size, also loaded, in tow, is from 3½ to 4 knots. This speed cannot be greatly exceeded owing to the wash set up in speeds above four knots being detrimental to the canal banks.

"Premier" on the Grand Junction Canal.

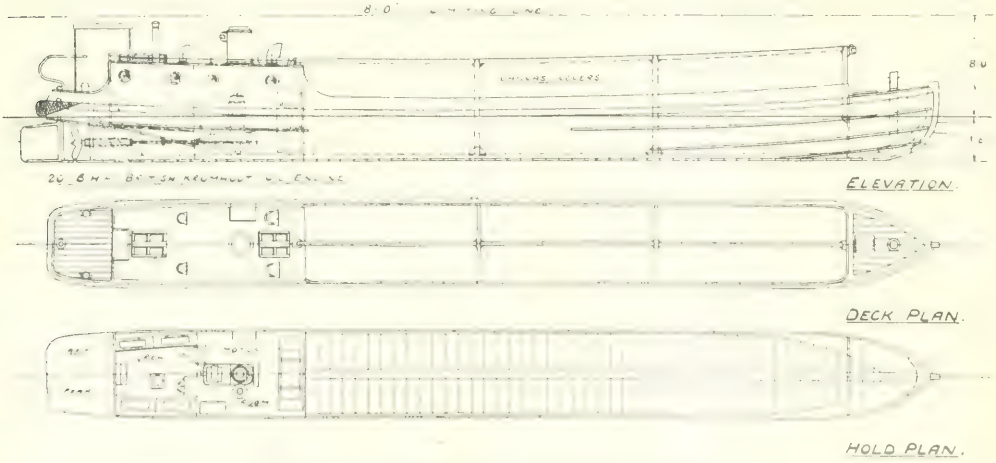
It will be noticed that the headroom in all cases is very restricted, this is on account of bridges, and is generally reckoned at about 8 ft. to 10 ft. from the water-line.

The general arrangement of another class of canal boat is also shown on this page. This is a canal tug of the following dimensions, viz.: Length, 50 ft. between perpendiculars, beam extreme 7 ft., and extreme draught 3 ft. 6 in. The hull of the vessel is constructed of iron, steel being of little or no use for canal work owing to the detrimental effect of the canal water in certain localities, this causing it to corrode with great rapidity. It will be seen that the crew are berthed forward in a cabin, the headroom in same being 7 ft.

The motor is arranged amidships and is also of the British Kromhout type, being a two-cylinder model capable of developing 40 b.h.p. at 425 r.p.m. As is usual in Kromhout engines of low power, a Kromhout standard reverse gear is fitted, which ensures ease and rapidity in reversing, some being entirely controlled from the steering position immediately abaft the engine room. A fuel tank, having a capacity of 250 gallons, is fitted at the forward end of the motor space, whilst a daily-use tank is fitted on the aftermost bulkhead of the engine room. A small acetylene projector is arranged on the cabin top at the forward end of same. The bows are shaped to allow of the tug being used as an icebreaker. During the past severe winter considerable trouble was experienced owing to the canals freezing on the surface, and suitable ice-breaking vessels were in great demand.



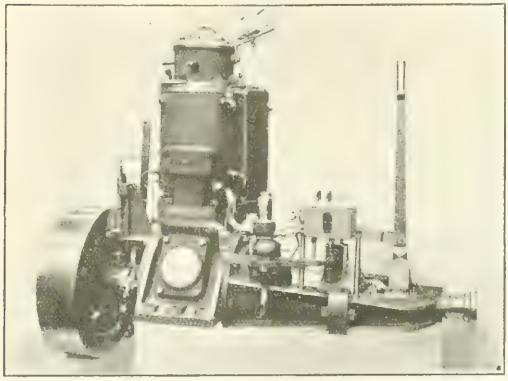
General Arrangement of Motor-Driven Canal Tug.



General Arrangement of Motor-Driven Canal Barge.

These two types represent a class of boat about which, up to the present, very little information has been published. This has been mainly owing to the fact that they have been built for

years past by rule of thumb; the present successful types are the result of over a century's practical experience. Various new types have been tried and experimented with from time to time, but the



20 b.h.p. "Kromhout" Oil Engine for Canal Barges.

old narrow or monkey barge type, such as is illustrated in this article, has been found to be the most satisfactory class of boat for use on the canals of this country.

SCOTTISH INSTITUTION OF ENGINEERS AND SHIPBUILDERS.

The Training of Apprentices.

In view of the attention which is being given at present by large employers of labour to the question of the effective training of those who will man the industrial works of the future, a paper on the education and training of apprentices was read at a meeting of the Institution of Engineers and Shipbuilders in Scotland, held in Glasgow last week. The paper was written by Mr. A. P. M. Fleming, who, in the course of his address, said the human element is the most important factor in every industrial undertaking, and the proper training of the worker, whether as bench-hand or manager, is a matter of the greatest concern, not only to the individual manufacturer or to industry, but to the State. The training of apprentices has become a traditional feature of British industry, but it is indisputable that in many branches of manufacture the character of this training has not kept pace with the ever-changing social and industrial needs. In many cases apprenticeship—which in past generations was the foundation upon which an individual's whole career depended—has become merely a name under the guise of which the productive efforts of youth are exploited to the ultimate detriment of industry and the State. One of the important effects of the war is the enormous acceleration of social and industrial developments, and these changes must be taken into consideration in any rational scheme of training of the young worker. From a social point of view the inevitable growth in the power of democracy demands a broad conception of education and training, which will not merely assist the material well-being of the rank and file, but also tend to develop their intelligence, and arouse them to a sense of tolerance and social responsibility.

Considering industrial developments, these have been most marked in the increasing need for works to be organised on scientific lines; in the greater attention paid to the environment of the worker; the use of methods of precision; the intensive use of machine tools; and in the increasing use of scientific research and the turning of its results to industrial account. These developments necessitate attention to the training not only of the youth who will be a manual worker all his life, but also those who will become staff officers and direct industrial undertakings.

Industrial Training.

Since on the well-being of the community depends industrial prosperity it is necessary that the most intelligent youths should fill the ranks of industry. Further, that such youths should be trained to be most efficient from the point of view of production. They should, in addition to being good craftsmen, and capable of a large output, possess a knowledge of the economic principles that underlie industrial production, appreciate the scientific laws pertaining to their trade or vocation, and be susceptible to intelligent supervision and guidance, This involves sound practical training, accompanied by suitable continuation education. A cardinal feature of industrial training should be a right appreciation of the relation and application of science to manufacturing processes. To obtain the most complete scheme of practical training, it is essential that apprenticeship be accompanied by suitable education. In fact, the two may be considered complementary to each other in a process which aims at producing a completely developed man.

The present methods of selecting boys for apprentices leave much to be desired. While some employers earnestly endeavour to get the right type of boy either by personal interview, qualifying examinations, personal reference, or by a workshop probationary period, in very many cases no systematic methods of selection are employed. Modern manufacturing conditions do not lend themselves to the individual practical training of an apprentice, such as was possible in previous generations. The difficulty, therefore, of ensuring thorough training is the lack of individual attention, which can usually be given to each apprentice by an experienced workman, and the fact that high productive output often overrules the considerations of refinement in training. Much may be done to minimise this, however, by assigning to experienced workmen one or more youths to whom the former will stand in the relation of a foster-father and be responsible for training and conduct. The success of any form of continued education rests essentially upon proper elementary education, and there is a growing tendency among industrialists to attach importance to special pre-apprenticeship education.

Future Developments.

After a review of the various schemes for the training of apprentices at home and in foreign countries, the lecturer said that in consideration of the industrial conditions of the future, two factors were predominant, namely, the increasing and further application of science in all branches of industry, including the scientific organisation of the man-power in factories. The other is the increasing power of democracy, and the need for harmonious relations between employers and employees. In both these factors proper education and training during the unstable years of adolescence is of the utmost importance. While not of universal application, the plan of continuation education in the works school affords the best means of efficiently training the young workman, and of bridging the gap between the embryo workman and employer. Facilities for upward mobility, whereby any youth of talent and perseverance can rise to the highest staff positions, are the best means of democratising industry, as well as using to the utmost the valuable asset which such ability represents to industry and to the State. While manufacturers are naturally inclined to view the problem of apprenticeship training and education from a strictly industrialist point of view, it is necessary for them always to keep to the fore the broader claims of citizenship. In this connection it may be noted that a good workman is almost invariably a good citizen, hence any means that may be taken to improve the training of the worker cannot but react beneficially upon the community as a whole.

THE NEW SHIPBUILDING COUNCIL.

The Admiralty announces that the formation of a Shipbuilding Council has been approved under the chairmanship of the Admiralty Controller. On this Council representatives of the shipbuilding and engineering trades will be joined by officers of the Admiralty, and problems of naval and commercial shipbuilding and repair will be considered. The Council differs from the Shipbuilding Advisory Committee by the inclusion of naval shipbuilding in its purview, and by being relieved from certain executive functions in the placing and following up of contracts which have been undertaken by the Admiralty Controller and Director of Contracts. All the gentlemen who served on the Shipbuilding Advisory Committee, and who have not since joined the staff of the Controller's Department, have already consented to serve on the Council, and the full list will be published shortly.

The names of those who have already notified their willingness to serve on the body are: Mr. W. S. Abell, chief surveyor of Lloyd's Register; Sir George Carter, managing director of Cammell Laird & Co., Ltd.; Mr. F. N. Henderson, of D. & W. Henderson & Co., Ltd., shipbuilders, Glasgow; Mr. James Marr, of J. L. Thompson & Sons, Ltd., shipbuilders, Sunderland; Mr. A. C. Ross, director of Hawthorn, Leslie & Co., Ltd.; and Mr. H. B. Rowell, chairman of R. & W. Hawthorn, Leslie & Co., Ltd.

Other prominent members of the shipbuilding and engineering trades who have joined the Controller's Department, and who will attend meetings of the Council when matters affecting them are discussed, are: Major Maurice Denny, partner of Denny Brothers, of Dumbarton: Mr. G. S. F. Edwardes, director of Smith's Dock Company, Ltd.; Mr. H. M. Grayson, of H. & C. Grayson, Ltd.; Major J. W. Hamilton, chairman of W. Hamilton & Co., Ltd.; Lieutenant-Colonel J. Lithgow, senior partner of Russell & Co., and director of Robert Duncan & Co., and director of Napier and Millar, Ltd.; Lieutenant-Colonel J. Mitchell Moncrieff, M.Inst.C.E.; Mr. Noel E. Peck, director of Barclay, Curle & Co., Ltd., and of Swan, Hunter & Wigham Richardson, Ltd., ex-vice-president of the Shipbuilding Employers' Federation, ex-chairman of the Clyde Shipbuilders' Association; Mr. A. W. Sampson, late director of Fairfield Shipbuilding and Engineering Company, Ltd.; and Mr. W. Rowan Thomson, senior partner of David Rowan & Co., ex-chairman of North-West Engineers' Association.

PURCHASE OF CLYDE ENGINEERING WORKS.

As we announced in our issue of last week, Russell & Co., shipbuilders, Port Glasgow, have acquired the well-known engineering business of David Rowan & Co., Elliot Street, Glasgow. In the past Russell & Co., not having an engineering establishment of their own, required to have the machinery for the vessels built by them constructed by other firms. They will now be able to turn out complete ships from their own establishments, that is to say, they will be in a position to build not only hulls, but also engines and boilers without any sub-contracting. Russell & Co., who are well known as being among the leading builders of cargo steamers in the United Kingdom, have turned out for many years past a larger gross tonnage of new shipping than other Clyde shipyards. They have for many years specialised in cargo steamers of what may be regarded as practically standardised types. Within recent years they have acquired two additional shipyards at Port Glasgow, those of A. Rodger & Co., and Robert Duncan & Co., making three yards in the district. With none of these establishments, however, has marine engineering been associated.

The output of mercantile tonnage by Russell & Co. last year consisted of nine vessels of about 48,000 tons gross, while that of 1915 was about the same amount. In these years, however, war conditions affected the output of merchant ships. Going back to 1914, when the firm had only two yards, they launched 15 vessels of an aggregate of 78,000 tons, and in 1913, 16 vessels of 84,000 tons.

David Rowan & Co. have specialised for many years in the construction of engines for cargo steamers, and recently they have devoted special attention to the construction of geared turbines, of which they have turned out a considerable number. Their 1915 output consisted of engines of approximately 24,000 i.h.p., that of 1914 of engines of 76,000 i.h.p., and that of 1913 of engines of 56,000 i.h.p. Their establishment is one of the largest and best equipped of its kind on the river, and it is widely known among employers and workers alike, because of the adoption, long ago, by the firm of the premium bonus system of paying wages. The present chairman of the firm (Mr. W. Rowan Thomson), who is serving in an important position on the Admiralty staff in London, has written a book on the Rowan Premium Bonus System, a review of which appeared in *Shipbuilding and Shipping Record* of July 26, 1917.

SPECIAL LOOK-OUT MEN FOR MERCHANT SHIPS.

In exercise of the powers conferred upon them by the Defence of the Realm Regulations, and all other powers thereunto enabling them, the Lords Commissioners of the Admiralty have made the following Regulations:—

All British merchant vessels of 2,500 gross tonnage and upwards shall include in their crew four men, specially engaged, who will when required act as look-outs at the masthead or elsewhere, but the total number of the crew should not be increased for this purpose.

When in areas in which submarines may be encountered these look-outs are to be employed solely on their special duty, keeping watch in four watches, each watch to be of not more than two hours' duration. When off watch in these areas they are not to be employed upon any of the ordinary work of the ship.

Before men are signed on for this duty they must agree to undertake this special work whilst in the areas mentioned.

These men must obtain the special Board of Trade certificate as to eyesight, and men are not to be signed on for this particular service unless they are in possession of this certificate.

Any member of the ship's crew may be selected, provided it is clearly understood that none of the ship's officers, petty officers, or any of the guns' crews are to be considered as borne for this special duty.

These special look-outs, provided their duties are carried out to the satisfaction of the master, who will be required to give a written certificate that this is the case, should be given extra pay at the rate of 15s. per month whilst the ship is in areas in which submarines may be met.

A proper crow's nest is to be provided for look-out purposes as high as possible in every ship which has a mast suitable in character and position for the purpose.

From daybreak till dark the look-out is to be stationed in the crow's nest when fitted. In other cases the look-out is to be stationed as high aloft as possible.

From dark to daybreak the look-out will be stationed in the position the master considers the most suitable.

Note.—Information as to the areas in which submarines may be encountered may be obtained from the shipping intelligence officers at London, [illegible] the reporting officers abroad.

Port Charges at Penang.—The Straits Settlements *Government Gazette* recently published a Notification under the Straits Settlements Ports Ordinance, 1912, giving a scale of charges framed by the Penang Harbour Board and approved by the Governor in Council. The scale of charges covers, *inter alia*, wharfage, stevedorage, cranage, labour, lightering, watering, bunkering, warehousing, &c. A copy of the *Government Gazette* may be consulted by British firms interested at the Department of Commercial Intelligence, 73, Basinghall Street, London, E.C. 2.

GENERAL NEWS SECTION.

PERSONAL.

With reference to the death of Mr. Peter Denny, the Clyde shipbuilder, which we briefly referred to in our last issue, we are now enabled to give a photograph of the deceased gentleman and some further particulars of his career. He was the second son of the late Mr. Peter Denny, and along with his brothers, Sir Archibald Denny, Bart., and Colonel John M. Denny, C.B., was associated all his life with the well-known shipbuilding and engineering firms of Dumbarton. After serving his apprenticeship as an engineer and gaining sea experience, Mr. Peter Denny took up the management of the engine works at Dumbarton, and became a partner of the concern in 1879. A few years later he was also admitted as a partner of the shipbuilding firm, and for the past 39 years was in close touch with the affairs of both the engineering and shipbuilding companies. He also interested himself in public affairs. Early in life he entered Dumbarton Town Council, and was subsequently elected to the magistracy. He was a member of the County Council and an honorary Sheriff-Substitute of Dumbartonshire. Mr. Denny also took a keen interest in educational matters and assisted in the formation of the Dumbarton School of Science and Art. He was a past president of the Dumbarton Philosophical Society and for a term was president of the Dumbarton Unionist Association.

Photo [*Lafayette.*

The late Mr. Peter Denny.

Mr. A. MacFarlane, who has been assistant manager for the past ten years at the engine works of Palmer's Shipbuilding Company, Jarrow, is about to take up a new appointment on the Clyde, and in token of respect to him the officials, workmen and apprentices, at the engine works have made him a suitable presentation.

Mr. Arnold Trinder, of the firm of Trinder, Anderson & Co., shipbrokers and shipowners, London, has been appointed by the Shipping Controller to investigate all cases of apparently unnecessary delays to ships or waste of tonnage through any other cause. Any shipowner or broker who is aware of such cases is requested to communicate with him at the Ministry of Shipping, in order that the matter may be investigated without delay.

The Albert Medal has been bestowed by His Majesty the King upon Lieutenant James Campbell Hurry, R.N.R., for gallant conduct in rescuing seven injured men from the steamship *Earl of Forfar*, of which he was master, which took fire whilst lying at Archangel. He incurred considerable risk, having had to lift several live shells from the deck in order to get at the wounded men. Shortly after the last man was rescued the deck blew up.

Captain Charles Ruthven Stewart, a member of the Mercantile Marine Service Association and a well-known master in the service of the Moss Steamship Company, has been awarded the Distinguished Service Cross by His Majesty the King. Captain Stewart, who was master of an Admiralty transport, was instrumental, in the early part of the present year, in saving the lives of 67 people, under circumstances of difficulty and danger, from a hospital ship which had been attacked by an enemy submarine.

Sir John R. Ellerman, Bart., has subscribed £5,000 to the "Comrades of the Great War" £1,000,000 Appeal.

It is officially announced that Mr. E. G. Sahlin has been appointed Acting Consul-General for Sweden in London.

Lieutenant-Commander Charles K. Sergent, R.N.R., who has been awarded the bronze medal of the Board of Trade for gallantry at the wreck of a British steamer in March last, was pilot master at South Shields for seven years before the war. He is now on the retired list. Lieutenant-Commander Sergent is a freeman of Newcastle and an Elder Brother of Trinity House.

The death has occurred, at the age of 94 years, of Captain William Bairnson, of Claughton, Lancs. He was the first shipmaster to bring chilled mutton from Canada, and he commanded a ship that carried food and ammunition during the American Civil War.

The bronze medal of the Royal Humane Society has been awarded to Gilbert Sisterson, aged 17, an apprentice fitter at the graving-dock works of Brigham & Cowan, South Shields, for conspicuous bravery, on August 22, in jumping into the Tyne and rescuing another apprentice named George Hardcastle, who had fallen overboard.

The funeral took place on Saturday of Mr. James Buchanan, Managing Director of the well-known engineering firm of James Buchanan & Son (Liverpool), Ltd. He was admitted a partner in the firm in 1877, and in recent years under his direction the business has progressed until it has become one of the most important engineering concerns in the district. Mr. Buchanan was President of the Liverpool Engineering Employers' Association, Member of the Executive Council of the Engineering Employers' Federation, the Institution of Mechanical Engineers, Society of Chemical Industries, and other scientific societies.

The death occurred suddenly, at Liverpool, on November 20, of Mr. John William Hughes, senior partner in the firm of T. & J. Harrison, of Liverpool and London, managing owners of the Charente Steamship Co., Ltd., the Harrison Line of steamers to India, Brazil, the Gulf and North Pacific ports. Mr. Hughes, who was in his 75th year, was a prominent and one of the oldest members of the Mersey Docks and Harbour Board. He was also a director of the Suez Canal Co. and joint vice-chairman of the Liverpool Grain Storage and Transit Co., Ltd. He will long be remembered at the port of Liverpool for his long and valuable services in dock administration, and for his benevolence to public institutions, and to other movements that appealed to him. He became a member of the Mersey Docks and Harbour Board as far back as 1888, and for the last 21 years has been Chairman of the Works Committee of that body. In that capacity he took a prominent part in all the alterations and changes made in the

Mersey Dock system. That his great business gifts were recognised far beyond his native city was seen in the year 1905, when without his knowledge he was appointed to a seat on the Board of the Suez Canal Company. Mr. Hughes evinced during his lifetime much interest in educational matters, and besides scholarships bearing his name, he was one of the donors of the Harrison-Hughes Engineering Laboratories at the Liverpool University, which cost about £10,000.

The death took place on Saturday of Mr. John D. Ormrod, Assistant General Manager of the Tedcastle Line which trades between Liverpool and Dublin. Mr. Ormrod, who was 67 years of age, enjoyed a wide popularity among Liverpool shipping men. Prior to joining the Tedcastle Line, he was for about 28 years associated with the late famous Guion Line.

The death took place on November 18 of Mr. Ole Sanne Christensen, of the firm of C. S. Christensen & Co., Ship Brokers, of 10, London Street, Fenchurch Street, E.C. Mr. Christensen, who was 75 years of age, became naturalised in this country in 1865, being a Norwegian by birth. He was a member of the Baltic Mercantile and Shipping Exchange, and had been established in London as a shipbroker since the year 1866.

The Council of the Liverpool Chamber of Commerce have elected Mr. C. R. B. M'Gilchrist, late senior partner of the firm of Andrews, Gillespie & Co., Liverpool, to be Secretary of the Chamber in the place of Mr. Alan H. Milne, C.M.G., who has resigned on account of ill-health. Mr. M'Gilchrist was formerly a member of the Council of the Chamber, Vice-Chairman of the General Trade Committee, and Chairman of several special Committees, and in the difficulty at this juncture of finding someone familiar with the work, he offered his services to the Chamber for the time being.

It is announced that Lieut. A. C. Vyvyan Robinson has disposed of his interests in the firms of Hansen Bros., Ltd., and the Hansen Shipping Company, Ltd., of Mount Stuart Square, Cardiff, to Mr. S. W. Hansen, so that the partnership hitherto existing between them is now terminated. Lieut. Robinson was associated with Mr. Hansen in business for nearly four years, but for the greater part of the time he has been on active service, and it is chiefly on account of his military duties that he has retired.

STANDARD WAGES FOR THE MERCANTILE MARINE.

On November 2 the Shipping Controller announced that he had secured the agreement of shipowners and seamen to the formation of a National Mercantile Marine Board to settle the details of the national standard rates of pay for officers and men of the mercantile marine, and to advise on all questions relative to the *personnel* of the mercantile marine.

Nominations to the Board have now been completed and the constitution of the several panels will be as follows:—

Chairman of the National Mercantile Marine Board, Sir Leo Chiozza Money, M.P.; deputy chairman, Mr. C. Hipwood, C.B.

Representing the owners:—Mr. F. C. Allen, Mr. L. F. Pritchard, Mr. Cuthbert Laws, Captain Hooper, Mr. J. Howard Glover, Mr. F. S. Watts.

Representing the officers and men: (*a*) Deck Officers' Panel.—Association of Coastwise Masters, Mates, and Engineers, Mr. J. E. Foley; British Shipmasters' and Officers' Protection Society, Captain Allison Wood; Imperial Merchant Service Guild, Captain W. Baker, Mr. T. W. Moore, Captain A. B. Toms; Mercantile Marine Service Association, Captain J. H. Goodwin. (*b*) Engineers' Panel.—Amalgamated Society of Engineers, Mr. A. Gorman, Mr. R. D. Swales, Mr. R. Young; Marine Engineers' Association, Mr. D. Brumah, Mr. J. W. Philpot, Mr. T. Spencer. (*c*) Sailors' and Firemen's Panel.—National Sailors' and Firemen's Union, Mr. E. Cathery, Mr. T. Chambers, Mr. Havelock Wilson, Mr. J. Henson, Father Hopkins, Mr. C. McVey. (*d*) Cooks' and Stewards' Panel.—National Union of Ships' Stewards, Cooks, Butchers, and Bakers, Mr. J. Cotter, Mr. T. Donnelly, Mr. F. Franklin, Mr. W. Jones, Mr. W. Snailes, Mr. A. Warner.

The general secretary of the Board is Mr. H. W. Griffin, Ministry of Shipping, St. James's Park, S.W.1.

[illegible] by November 22, when [illegible]

FROM OUR CORRESPONDENTS.

CLYDE DISTRICT.

(From Our Own Correspondent.)

Building of Concrete Ships.—In all probability the work of constructing concrete ships will be commenced shortly at Greenock. An application has been made to Greenock Corporation for ground on which to build vessels of this type on behalf of the Admiralty. Arrangements have now been made for the letting of a portion of Battery Park to the promoters of the scheme. It may be recalled that inquiries were made at Dundee recently with regard to securing a site for a shipyard for the construction of concrete vessels, but the promoters were unable to acquire suitable ground for the purpose.

Clyde Ambulance Scheme.—A movement has been started among workers employed in shipyards and engineering works in the Clyde district for the purpose of organising and controlling an annual ambulance competition similar to that provided by the railway companies and other large employers of labour. An appeal will shortly be made to engineering and shipbuilding employers for support to the movement to enable the committee of management to secure trophies and prizes for the contests to be organised. Mr. James Breckenridge (Mechan & Sons, Scotstoun) is secretary and treasurer of the organisation.

New Year Holidays in Shipyards.—It has been decided by the Ministry of Munitions that the holiday periods in shipyards, engineering works and munition factories shall be observed as in normal times. The precise dates when the holidays will begin and terminate have not yet been announced, but prior to the war the New Year holidays usually extended over the greater part of a week, work being stopped on the last day of the closing year. In addition to providing the workers with a well-earned period of rest, the holidays give employers an opportunity of effecting necessary repair and renewal of their plant, which has been subjected to great strain during the past year. Mr. Fred Lobnitz, Director of Munitions in Scotland, expresses the hope that with the rest period in view, all output will be stimulated so as to increase production materially before the new year begins.

Proposed Purchase of Port Glasgow Harbours.—It was with a good deal of regret that Port Glasgow Town Council learned last week that Messrs. Lithgow (of Russell & Co., shipbuilders) had withdrawn their offer to purchase the harbours of Port Glasgow, and to fill up one of them and present it to the town as a public park. The matter was referred to by Provost Macfarlane, of Port Glasgow, at a meeting of the Town Council held recently. The Provost said that the harbours themselves were in a state of hopeless bankruptcy. For over 20 years "B" stockholders had received no interest on their money, and there was no prospect of their getting any. The interest on "A" stock was nine years in arrears, and there was little prospect of holders of this class of stock ever getting their money back either. Messrs. Lithgow, he said, had offered to pay 20 per cent. of the price of "B" stock and 50 per cent. of the "A" stock. That was a generous offer, and they were prepared to find the capital to improve the harbours and make them suitable for carrying on trade. Owing to the criticism to which the offer had been subjected, and the legal difficulties of carrying through the transaction, Messrs. Lithgow had withdrawn their offer, and the whole thing was now at an end. This, he thought, was a matter of very great regret.

Clyde Trust Policy.—Sir Thomas Mason, on being reappointed Chairman of the Clyde Navigation Trust, at a meeting held last week, indicated that a change may be looked for in the future policy of the Trust which will probably have far-reaching effects for the shipbuilding industry. Referring to future developments, he said that the considerations for shipowners were not now what they were at one time on the Clyde. Vast, numerous and varied industries had grown up on the banks of the river, and development of these industries was a matter of great importance to the Trust. Shippers might to some extent resent that, because it was manifest that if there were no ships there would be no revenue. Owing to the disappearance of ships, however, and in consequence of the menace to the shipping of this country and of the world, there was a great future for shipbuilding when the war ceased. The work that would probably come to the Clyde could not be estimated, because it was there, in one of the greatest shipbuilding centres in the world, that the shortage of shipping would, to a large extent,

have to be made up. It was therefore of the greatest importance that the Clyde Trust should give what consideration they could to those who were willing to enlarge their premises just now and to embark on speculation, which, with the advent of Government ships, took a very great courage indeed and was a high form of patriotism.

SCOTTISH EAST COAST DISTRICT.

(From Our Own Correspondent.)

Leith Dock Commission. At a meeting of Leith Dock Commission held on Friday, Mr. P. J. Pringle was unanimously re-elected Chairman.

Dundee Dockers' Wages.—The dock labourers in the employment of Dundee Harbour Trust have been offered an increase in wages of 1d. per hour. In the event of this offer not being accepted the matter will be submitted to arbitration.

Fraserburgh Harbour Finances.—At a meeting of Fraserburgh Harbour Board held last week, it was reported that the revenue for 1917 was £11,679, compared with £8,593, an increase of £3,086. The chief factor which resulted in the increase was the new system of rating, namely, the *ad valorem* rate for exported herrings, which had worked with perfect smoothness. The imports for the year amounted to £6,775, and for 1916, £2,615. The exports showed a decrease for 1917 of £1,082 compared with the previous year.

Dundee and Shipbuilding.—The inability of the Dundee harbour authorities to provide a suitable site for a shipyard, in which it was proposed to construct concrete vessels, has aroused a great deal of interest locally in the question of whether steps should be taken to encourage the development of shipbuilding on the Tay. It is pointed out by the more progressive section of the community that as Dundee Harbour Board has a large and increasing annual revenue from property and ground rent in addition to their income from shipping, the Trustees should abandon their present policy of caution and embark on a scheme for the development of the port. It is pointed out that before shipbuilding interests can be attracted to the river the authorities will require to provide a large floating dock. River and railway haulage must be cheapened, and the river must be deepened. It is believed that some of these proposals will come before the Trustees at an early date.

NORTH-EAST COAST DISTRICT.

(From Our Own Correspondent.)

River Wear Dock Improvement. In order to carry out a graving-dock scheme of considerable importance, the River Wear Commission is about to seek requisite Parliamentary powers. They propose to enlarge their existing No. 1 Graving Dock at the South Docks from 400 ft. to 600 ft. long and then to lease it to T. W. Greenwell & Co., ship repairers, who are also to carry out the work of extension. Facilities for dry-docking the larger type of vessels has been increasingly felt of late years, and the present undertaking will, when carried through, add appreciably to the ship-repairing resources of the river.

Industrial Expansion.—Tees-side has long been regarded as one of the foremost districts in the country for the production of iron and steel, and the projected extensions of a varied kind on the banks of the river all point to still greater industrial achievements in the near future. Mr. J. H. Harrison, in a presidential address to the Cleveland Institution of Engineers, said the Tees Conservancy Commissioners had converted a straggling stream into a great river, and had kept on improving it, and the facilities offered had induced industrial concerns to settle down on the riverside. The Ministry of Munitions, he went on to remark, had discovered Middlesbrough and Tees-side, and had put a value upon it which they ought to take care not only to keep hold of, but to increase continually. Probably, it may be said, the Tees has been too retiring in the past in proclaiming all that it had to offer to the prospecting capitalist, but now there is a manifest awakening to the greater industrial potentialities of the neighbourhood, and developments are steadily going on. The writer was in the district a few days ago, and realised more vividly than ever what an immense national asset the works on the banks of the Tees have been during the war.

Canteens for Workers.—For many years now it has been thought by careful observers that more might be done in the way of providing canteens for workmen in the shipbuilding and engineering industries, wherein they could obtain well-cooked meals at reasonable prices. On the Tyne, some thousands of men have to leave home at 5 o'clock in the morning and carry two meals with them, their breakfast and dinner, and therefore these cold and mostly dry repasts cannot make for cheerful and efficient workmen. Men who are able to get their meals at home are those who reside not far from their employment, and here again the conditions are not what they should be, because they create congested populations in grimy streets merely to be near the works to get out for meals. The artisan and his family need to have their dwelling away from the works and in refreshing surroundings if the highest standard of efficiency in the works is to be maintained.

To those works which have already established dining-rooms for their workmen a very commendable addition is being made by Palmers' Shipbuilding Company in connection with their Jarrow and Hebburn establishments. On a convenient site there are being erected a large hostel and canteen. There are to be three blocks of buildings, each three storeys high. The hostel will have accommodation in separate rooms for 400 workmen, and the canteen will seat 800 workmen. Good meals are to be supplied at acceptable prices, and to the non-resident employees this will be a great boon. The hostel will be something more than a mere living house; there will be attached to it a considerable portion of ground which may be utilised for purposes of recreation. If the weather conditions do not interfere unduly with the progress of the scheme, the first part of the undertaking is expected to be completed by the spring, and the remainder finished by midsummer.

Shipbuilding After the War.—The building of ships after the war to replenish the British mercantile marine and so enable it to maintain its supremacy among the nations, was discussed at a special meeting of the Newcastle Chamber of Commerce last week, and particular stress was laid upon the fact that neutral owners had booked large orders in this country for steamers at £25 a ton. As has been mentioned before in these notes, Tyne shipowners are keenly concerned as to the future of the British tramp steamer in view of the competition for new boats from Norwegian and other neutral shipping interests, and several of the leading men took part in the debate in the Chamber of Commerce on two resolutions brought forward by Mr. R. S. Dalgleish. The proposals were lost by a narrow majority, and because of the fact that the balance of feeling was against the shipowners asking for special treatment.

Probably, if Mr. Dalgleish had agreed to accept some modification in the phrasing of his resolutions in order to meet the suggestion that the shipowners were seeking preferential consideration, they would have been carried, but he declined to vary the wording, and thus they were defeated on a show of hands. The resolutions could not of themselves be regarded as particularly favouring the shipowners, but it was the suggestions that were read into them that brought about their rejection. The first resolution viewed with concern the threatened menace to our mercantile supremacy by the incoming of neutral orders at big prices; this passed over without much comment, but the second proposal requested the Government "to take such steps as will enable the shipowners of the United Kingdom . . . to maintain maritime supremacy," and this was where an implied, or imagined, subsidy came in, Mr. Dalgleish suggesting, in his speech, when moving the recommendations, that the shipowners should be assisted by a return to them of some portion of the excess profits paid by them, on the distinct understanding that the money was re-invested in new tonnage.

Both Mr. Dalgleish and Mr. George Renwick put up strong cases in the national interest as well as from the standpoint of the individual shipowner to show how essential it was that the English shipowner should not be outdone by the neutral in securing new tonnage. Mr. Dalgleish said it was known that 80 orders had been placed with North-East Coast builders on Norwegian account at £25 a ton, a price that was beyond the means of the British shipowner, and he mentioned that he had it on the authority of one firm alone in London that they had actually placed 60 orders for Norwegians at North-East Coast and Clyde yards. The reason the Norwegians are coming to this country is because they cannot get ships built anywhere else as cheap. It is understood that the United States and Japan builders are asking £45 to £50 a ton for after-the-war tonnage. Mr. Renwick said that £25 was not the maximum Norwegian offer, as they were prepared to pay higher figures than that, and also to allow for all contingencies in respect of higher costs of labour and material. There is no doubt that the neutrals have accumulated enormous reserves out of the war with which to buy new steamers, and when we remember how much

better, relatively, they have done than the British shipowners, we should face the point of view of the latter without a tinge of bias, however it may be prompted by the stories of shipowners' great profits, if we would visualise aright future eventualities. The British shipowners made our mercantile marine by their foresight and enterprise, and if they are given a chance they will return it, but they cannot be expected to do so if they are squeezed into the background by millionaire neutrals.

MERSEY DISTRICT.

(From Our Own Correspondent.)

Dockside Carters' Wages.—The Mersey dockside carters who have worked a month's notice in respect of their demand for an increase in wages of 13s. per week have accepted an offer of the Employers' Association, the details of which have not yet been disclosed.

Increased Dockside Traffic.—The Mersey Docks and Harbour Board have just decided to purchase three additional locomotives to haul the increasing dockside railway traffic. The total traffic dealt with by the dock railway for the five years ending June 30 shows that this provision has become necessary. In 1913 the tonnage hauled was 436,769 tons; in 1914, 450,000 tons; in 1915, 491,000 tons; in 1916, 697,000 tons; and for the present year the total is expected to reach about 1,000,000 tons.

Increased Freight Rates.—Shippers to the ports of South and East Africa and Mauritius have been notified that the rates of freight will be increased by approximately 50 per cent. on all steamers loading in the United Kingdom on and after November 24. The steamship lines making this increase with the authority of the Ministry of Shipping are the Ellerman & Harrison Joint Service, R. P. Houston & Co., the Clan Line, Ellerman & Bucknall Lines, Union-Castle Line, the British India Steam Navigation Company, Bullard, King & Co. (Natal Direct Line), and John T. Rennie, Son & Co. (Harrison Rennie Line).

Silver War Badge.—The amended regulations under which silver war badges will henceforth be awarded to the officers and men of the mercantile marine have been communicated by the Board of Trade to the Mercantile Marine Service Association here, and have given great satisfaction to the council of that body. Merchant seamen of all grades will now be entitled to the silver badge for illness, disease, or "strain" due to war conditions which may render them unable to go to sea for at least six months, in addition to what was provided for in the earlier regulations, namely, "men who were permanently incapacitated for service in the mercantile marine by an injury caused by any act of hostility by or against the King's enemies."

SOUTH WALES DISTRICT.

(From Our Own Correspondent.)

Admiralty Deputation to Visit Bristol Channel.—At a meeting of the Swansea Council, the Mayor stated that the Council and the Harbour Trust were putting forward strong claims with a view of obtaining a shipbuilding yard at that port. He said the Admiralty proposed to make an enquiry on the spot, and a deputation from them would visit Swansea during the first week in December. A similar enquiry is also to be made at other ports in the Bristol Channel.

Chepstow Shipbuilding Scheme.—Since the amalgamation of Finch's shipyard with the Standard Shipbuilding Company, various extensions and alterations have been carried out. The first vessel laid down is nearing completion, and is expected to be launched about the middle of next month. This vessel will be the largest ship ever launched at Chepstow. Several other vessels are already in course of construction. The preliminary work in connection with the new dock at Beachley is making rapid progress.

Control of Imports and Exports.—The Swansea Chamber of Commerce on Friday discussed the Bill which the Government are to introduce for the control of imports and exports by the Government for three years after the war. A resolution was passed recording the view of the Chamber that such control should not extend beyond six months after the conclusion of peace, and that regulations should not be laid down without consultation with the traders of the country. Mr. W. T. Farr explained that the increases in tipping charges in a recent circular from the railway companies were *pro rata* to the increase previously made as compared with the extra cost of labour. In this instance the increase would amount to 17½ per cent.

Question of Industrial Unrest.—The following resolution was passed at a meeting of the Cardiff Chamber of Commerce on September 12:—"That this meeting of the Cardiff Chamber of Commerce, whilst cordially agreeing with the recommendations of the Welsh Commission on Industrial Unrest, which aim at more friendly relations between employers and employees, and the fairest possible division of the proceeds of the industries in which they are jointly engaged, is, nevertheless, of opinion that a number of the other recommendations of the Commission would, if adopted, be extremely injurious to the future industrial well-being of the country." A committee of the Chamber was appointed to set out in detail some of these objections, and they have now issued their report. Dealing with the prohibition of the employment of Chinese on British ships the Committee state:—"We agree that when British seamen are available they must have a preference over foreigners, but we think that an unqualified prohibition of the employment of foreigners, however inadequate our own supplies of men might be, would be a most serious mistake, and if foreigners are to be eligible, it would be most invidious and unwise to single out Chinamen for special exclusion." In regard to the question of the prohibition of the practice of importing labour from one port to another when local supplies of labour are adequate, the Committee state, "If this means that when local supplies of labour are adequate and available there shall be no transference of labour from other ports, we have no objection to make. If, however, it means that in the event of a labour dispute, however unreasonable the demands of local labour might be, no supplies should be brought from neighbouring ports because of the local supply being inadequate, although not available owing to the dispute, we think that such a prohibition would be most detrimental to the interests of the country."

BELFAST DISTRICT.

(From Our Own Correspondent.)

Coming Expansion of the Port.—The developments in connection with the port, which are the subject of a Parliamentary Bill, have created great interest. The shipbuilding extensions which are in course of negotiation have not been fully settled yet, but it is believed they will include the establishment of an additional yard at the east side of the Musgrave Channel and an extension of an existing yard on the Co. Antrim side of the river. The housing accommodation of Belfast is taxed to the uttermost at the present time, and until additional houses are erected there cannot be any very substantial progress. Once material can be got, house property can be put up rapidly, and there is a general opinion that inside the next few years the shipbuilding industry of the city will be enormously expanded.

The 12½ Per Cent. Bonus.—The engineers' strike in the Belfast shops ended on Saturday, when many of the men resumed work after a lapse of ten days. This strike originated over the non-application of the 12½ per cent. bonus under the Hills award, looseness in drafting of which is alleged to have been the cause of the trouble. The shop stewards are held to be responsible for the outbreak which was not countenanced by the A.S.E. The men paid no heed to an appeal from the Trade Union Advisory Committee to resume work and stayed out till they actually got the news that they were to receive the bonus. A number of apprentices came out with the men, and the only hands left in the departments were the remaining apprentices and the soldiers released from the front, who would, of course, have been sent to the army again had they gone out.

THE FREIGHT MARKETS.

(From Our Own Correspondents.)

London.—There has been no abatement in the competition for available tonnage on the Baltic Exchange, and high rates continue to be quoted from most directions. From the River Plate the basis rate remains at 145s. from the up-river ports and 5s. less from the down-river ports to the United Kingdom. There is a very spirited inquiry for tonnage on net form of charter from the

ports of the North American Atlantic seaboard. To the United Kingdom 230s. is offered, to France 260s., and to Italy 360s., with an additional 30s. for Gulf loading. Steamers are sought for the carriage of heavy grain, and 40s. continues to be offered to the United Kingdom, 45s. to France, and 70s. to Italy. Coal cargoes can be worked from Virginia to the Plate at 125s., to Rio de Janeiro at $32, and to Santos at $34. On gross form of charter full rates are offered for sugar, Cuba to France and Italy. From the last there is competition for available boats. On scale basis Karachi would pay 250s. to the United Kingdom; Bombay, 275s., to the United Kingdom, and 400s. to the Mediterranean, and for kernels from the Madras coast to Marseilles, 550s. is still obtainable. The rice ports are willing to pay high figures, and probably more than 600s. could be had from Saigon or Burmah to France and the United Kingdom. In the Mediterranean section of the market rates from the ore and phosphate ports are represented by 45s., Huelva to the Mersey; 50 ft., Bilbao to Boulogne; 60s., Aguiles to Dunkirk; 50s., Bougie to the Clyde; 65s., Tunis to the same destination; 70s., Sfax to the Bristol Channel; and 60s., Huelva to the East Coast United Kingdom for pyrites. Representative rates in the Bay trade are shown by fixtures at 22s. 6d. and 23s., Bordeaux to Bristol Channel; and 24s., Bayonne to the same destination.

Glasgow.—Chartering on the Glasgow market has been slow throughout the week owing to the continued scarcity of tonnage, and in the outward and homeward trades rates were very firm. For the shorter voyages very few fixtures were reported, but a number of charters were arranged for homeward traffic. The following were among those reported: Ardrossan, Gibraltar, 3,000, 100s.; Bordeaux, 2,750, Bristol Channel, 22s. 6d. ppt.; Bayonne, 1,500, Bristol Channel, 24s. ppt.; Bordeaux, 950, Bristol Channel, 23s. ppt. Other fixtures in the longer trades were: New York, 2,600, River Plate, $25, net form, December; New York, 4,000, 10 p.c., Australia, about 180s., December; time charter States and West Indies, 2,800, 35s., one round trip, delivery and re-delivery north of Hatteras; time charter, United Kingdom, Dunkirk, Sicily, 1,800, 49s., twelve months.

Newcastle-on-Tyne.—The arrivals of "free" tonnage in the Tyne during the week under review have been lamentably small and, consequently, little chartering business has been possible. The coal trade has been largely saved, however, by reason of the good official demand accompanied by a sufficiency of requisitioned vessels to carry away cargoes urgently required. At the time of writing, steam coal collieries are fairly well supplied with stemmed tonnage, but gas coal pits could do with much more cargo space. So far as fixtures actually reported are concerned, London has been twice done at the firm figure of 21s. There is a little ease in the rates paid for Swedish ports, Gothenburg having apparently settled down at 190 kr., whilst Stockholm has been done at 197½ kr., a reduction in each instance of 2½ kr. on the week. The Spanish-Atlantic remains idle at 160s. quoted to Bilbao or Santander. There is a brisk inquiry for tonnage for Portuguese destinations, with 95s. steadily quoted for Lisbon and 105s. for Oporto, but these figures apparently fail to tempt owners. Tonnage for the coaling stations is being unavailingly asked for at 100s. to Gibraltar and 200s. to Port Said. No chartering for the Spanish Mediterranean is mentioned, although 300s. to Barcelona is now quoted, as against the previous highest, for Tyne loading, of 275s. The local committee for the export of coal and coke to France is almost idle just now on account of the paucity of requisitioned steamers offering at the time of writing.

Liverpool.—Only a quiet business is being done in outward freights, but there are any amount of orders which cannot be filled for want of ships. Coal shippers, particularly, experience this difficulty, and they would pay almost anything for neutrals, which offer very sparingly. To controlled destinations maximum rates are obtainable. Time chartering is brisk in the American trades, on basis of 35s. States to West Indies, and 40s., States-South America, for round trips, while 49s. has been paid for a handy boat for 12 months' charter in the European trade. In the homeward trades Eastern markets have still a brisk demand, but ships do not respond, and values are more or less nominal. The inquiry from North America continues good, but business is now being brought under control. Grain indicates 40s. to United Kingdom, 45s. to France, 70s. to Italy from the Range ports, while nitrate ports paid 200s. to West Italy, January; Virginia, 117s. 6d. to River Plate; and 100s. net charter from New York to River Plate. River Plate, homewards, steady at 145s. up-river to United Kingdom, and $22 paid on net charter to New York.

Cardiff and Swansea.—An active demand for tonnage for Allied and certain neutral destinations continues, but the number of fixtures actually concluded has not shown any material variation from previous weeks. The tonnage position as regards supplies for the authorities has been fairly favourable. The tone of the market remains strong and full top rates have been quoted for most directions. The number of fixtures disclosed remains small and were wholly for France:—Brest, 45s. (neutral); Cherbourg, 23s. (allied); Caen, three times at 48s. (neutral); Nantes, 30s. (allied); St. Nazaire, 61s. 6d. (neutral). The following were done for Newport loading:—Nantes at 29s. and 30s. (allied); Rouen, 48s. 9d. (neutral); and Bordeaux, 69s. (neutral). Several transactions from the United States to South America, in which local firms were interested, were reported:—Hampton Roads to Monte Video at 120s. for a 2,200-ton steamer and $25 for a 1,600-ton sailing vessel. On the Swansea freight market there has been a brisk enquiry, and rates were fully maintained, maximum figures being easily upheld for limitation directions. Business has, however, been mainly confined to French ports. The only fixtures disclosed were: Rouen, four times at 48s. 9d. for neutral steamers and Guernsey (Burry Port loading) at 42s.

Hull.—The Humber freight market has a firm tone, with a good demand, though the continued paucity of tonnage has the effect of limiting the amount of chartering business done. In the West Italian market only a small business is passing, but to the North French ports a fairly active traffic in steam and in small sailing coasters is being done. The neutral markets are full of difficulty owing to the shortage of tonnage and the difficulty of getting licenses.

THE COAL MARKETS.

(From Our Own Correspondent.)

The general all-round position of the coal markets of the country has shown some signs of improvement during the past two weeks, so far as the coal exporting centres are concerned, for with regard to the inland trade and markets no improvement was necessary, seeing that the collieries are more fully supplied with orders than they can execute. At the ports of the North-East Coast and South Wales the quantity of coal now being shipped, though far below what it was in pre-war days, is nevertheless considerable, and though the amount of new business put through is not large contract commitments keep the collieries in most cases fairly busy.

The position, however, is rather uneven. Some collieries are better placed than others with regard to railway and tonnage facilities for getting their outputs away. In the case of these better placed collieries the pits have been kept working regularly, but others not so well situated have been compelled to resort to short time to prevent the accumulation of too large stocks. Therefore the general position, though it has undoubtedly improved, is still rather irregular.

The bunker coal market is not very satisfactory so far as the coal owners are concerned. This is, of course, due to the limited movement of shipping, which does not improve as time goes on. On the North-East Coast there is a plentiful supply of good bunker fuel at 24s. to 27s. 6d., but special bunkers for export are not in very considerable supply and command fully 30s.

In South Wales also large stocks of small steams for bunkers are available, but the demand is very limited and prices, subject to the additional wage increase of 2s. 6d. a ton, are round about 18s. to 22s. 6d.

The North-East Coast coal markets are quite steady, even though no great amount of new business has been put through. There is a good demand for all classes of large steam coals, though smalls are rather a drug. Bituminous coal for household and gas-producing purposes is moving off well, and nuts too are in considerable demand inland, as also is coke.

Quite a number of inquiries are in circulation, including one by the Norwegian State Railways, for between 18,000 and 19,000 tons of best Northumberland or Durham steam fuel, which has to be shipped to named ports in the first two months of the New Year.

Prices are approximately for best Blyth steam, large, 29s. 6d. to 32s., and smalls, 18s. 6d. to 20s. 6d.; second steams, large, 25s. 6d. to 30s., and smalls, 18s. 6d. to 20s. 6d.; unscreened steams, 24s. to 25s.; North Northumberland steams, large, 28s., and smalls, 20s.; smithies, 25s. to 30s.; nuts, 32s. 6d. to 33s.; Durham gas coals, 23s. 6d. to 30s.; coking coals, 17s. to 25s.; house coal, 20s. to 22s. 6d.; bunker coal, 24s. to 27s. 6d.; speial bunkers 30s.; blast furnace coke, 35s. 6d.; and foundry coke, 42s. 6d

On the South Wales coalfield the demand with regard to the best classes of steam coal is, on the whole, satisfactory, owing to the large and steady takings by the authorities. Outside of this and contract business little has been done and the markets are very quiet. There has been and still exists rather serious congestion on the railways, which is proving a nasty stumbling block to the efforts made by the collieries to secure continuous working. The supply of empty wagons is limited, and is further interfered with by the prevailing congestion.

Having regard to this circumstance and the limits placed on the possibilities of export trade, the markets are reasonably steady, though of course quiet. Very little new business has been done. Firm inland pressure continues to be executed to obtain fuel of all descriptions, though steam smalls would benefit if they were absorbed more freely. As it is, stocks are too large and the problem the collieries have to face is how to prevent their too rapid accumulation. House coal and patent fuel is very well taken up.

Prices, subject to the additional 2s. 6d. a ton wages increase, are as follows:—Best steams, 33s.; seconds, 30s. 9d. to 31s. 6d.; ordinaries, 30s.; drys, 28s. 6d. to 30s.; steam smalls, 18s. to 22s. 6d.; best large Black Veins, 30s.; Western Valleys, 29s.; Eastern Valleys, 28s. to 29s.; nuts, 28s. 6d. to 30s.; peas and beans, 27s. 6d. to 28s. 6d.; house coal, 30s. 9d. to 33s.; No. 3 Rhonddas, large, 30s. 9d., and smalls, 26s.; No. 2 Rhonddas, large, 27s., and smalls, 17s. to 19s.; through and through coal, 22s. to 23s. 6d.; gas coal, 21s. to 25s.; and patent fuel, 30s.

The Hull coal market evidences very little change. The difficulty confronting operators is how to obtain sufficient supplies of fuel of all classes. Practically all the coal coming on the market is earmarked for Government and contract account. Market conditions in the absence of anything like appreciable quantities of free coal, are consequently very firm and limitation prices are fully upheld. France takes a large proportion of Hartley coal which comes to Hull, and bituminous fuel for household use and gas production, as well as nuts go inland where the demand continues exceedingly strong.

The Scottish markets likewise show little notable change, though there is possibly a rather improved export demand in the West of Scotland and Fifeshire. The inland demand is very good.

Prices are, subject to the 2s. 6d. per ton war wage increase, for splints, 28s. to 30s.; Hartleys, 29s.; Ells, 26s. 6d. to 28s.; screened navigations, 28s. to 30s.; unscreened navigations, 23s. 6d. to 25s.; steam coal, 27s. 6d.; and nuts, 21s. to 23s.

The Liverpool coal market is somewhat stagnant. Stocks are large, very little new business has been transacted, and all classes of fuel are moving off slowly. Operators would be glad of orders, and the collieries would be glad to get hold of more railway rolling-stock which is at present in a rather congested state.

As far as the inland coal trade is concerned, the only change to report is an increased pressure for fuel, especially steam coal. The collieries are supplying to their utmost limit of production, but the manufacturing and munition works are only able to obtain sufficient to keep them going and no stocks are being built up.

On the London market trade has been very quiet. The demand for house coal has dropped off somewhat in consequence of the milder weather, but merchants are not receiving a great quantity of coal, and consequently their stocks are not appreciably greater.

COMPANY MEETING.

Griffiths-Lewis Steam Navigation Company, Ltd.—The annual meeting was held at Cardiff on November 14. The Chairman (Mr. J. C. Gould), in moving the adoption of the report and accounts, said that unfortunately the profit for the year was not as substantial as they would have liked to have seen it. Up to June 30 last the profit was considerably in excess of the amount shown in the balance-sheet, but, as had been explained to the shareholders in August last, the calls from the war-risks clubs and the premiums they had to pay on one free ship had considerably depreciated the earning power of the company. In the profit and loss account a reserve had been made for war-risk calls which might yet come in, and therefore avoided the experience of last year in not making sufficient allowance for that contingency. As they had had a fair proportion of free tonnage in 1916, they were able to bring forward a balance of £46,000, but this year the carry forward suffered a reduction of £29,000. During the past year the management of the company had changed hands, and he thought he could reasonably say that the business of the company had developed considerably since the new management with three steamers and during one period of the year owning six, the year ended with three steamers in the company's ownership. The replacement of lost tonnage had occasioned the managers considerable anxiety, but the reserves and credit balances in the accounts would speak for themselves, and would afford evidence to the shareholders of the satisfactory nature of the negotiations whereby the tonnage lost by war risk had been made good. The company would soon be the owners of eight steamers, seven of which would be on requisition, and they might congratulate themselves on being able to secure another five steamers, free of club calls for war risk, which would, he hoped, enable them to earn a reasonable profit.

Mr. W. H. Seager seconded the motion, which was agreed to.

COMPANY REPORTS AND DIVIDENDS.

Schiffswerfte G. Seebeck A.G.—A dividend of 12½ per cent. is recommended, compared with 10 per cent. last year.

Pyman Steamship Company, Ltd.—The directors have declared a dividend of 5 per cent. for the half-year ended November 7.

Cardigan Steamship Company, Ltd.—The managers (Jenkins Bros.) announce that an interim dividend of 1s. per share, free of tax, has been declared on behalf of this company for the half-year ended September 30, 1917, being at the rate of 10 per cent. per annum.

A. G. Reederei Norden.—The revenue for 1916 included £1,220 (£490 in 1915) from the "Norden-Frisia"; £128 (£128) rent; £114 (£96) interest; and £118 (nil) average account. After deducting expenses, wages, and repairs £303 (£260) and allowing only £10 depreciation (compared with £820 last year), there is available a net profit of £910, after writing off last year's deficit of £363. A dividend of 5 per cent. has been paid (none last year).

Reiherstieg Schiffswerfte u. Maschinenfabrik.—The accounts for 1916-17 and the proposed dividend of 8 per cent. have been accepted. The chairman announced that the dividend would have been higher but for the fact that heavy expenditure had been incurred on new plant and on depreciation. Many orders were in hand for the "after-the-war" period and these would necessitate the building of a new slipway, the cost of which would be heavy. Bankdirektor G. H. Kammerer was re-elected to the superintending council.

City of Dublin Steam Packet Company.—The report states that, after providing for the interest on the mortgage loan, the mortgage loan sinking fund, the guarantee to the City of Dublin Junction Railways, and the Trade Steamers War Insurance Fund, the balance at the close of the half-year, including £6,880 brought forward, is £25,076. Of this the directors have placed £5,000 to the reduction of compensation to the shipbuilding shareholders, leaving a balance of £20,076, out of which the directors recommend the payment of a dividend of 5 per cent. per annum, less income-tax, on the cumulative preference stock, and a dividend of 5½ per cent. per annum, less tax, on the ordinary stock, carrying forward a balance of £5,521.

Griffiths-Lewis Steam Navigation Company, Ltd.—The report states that the directors consider the position of the company is considerably strengthened, both from a financial point of view and earning capacity, and hope, with immunity from calls which they expect to have during the next 12 months, to show better results on the trading account for next year. The profit and loss account from October 1, 1916, to September 30, 1917, shows a profit of £17,471, and the dividend paid for that period was 15 per cent. free of income tax. For 1916 the profits were £55,865, and the distribution to the shareholders was 20 per cent., free of tax, the same dividend having been paid for 1915. The balance-sheet as at September 30, 1917, shows that the company's fleet is written down to £345,000.

Barry Graving Dock & Engineering Co., Ltd.—The report for the year ended September 30 last states that the net profit, after providing interest on debentures and war profits tax, amounts to £22,821, to which must be added the balance brought forward, leaving to credit of profit and loss account the sum of £56,851. From this amount an interim dividend was paid in May, leaving a balance of £48,882. The directors recommend a final dividend, payable on November 30, of 5 per cent. per annum on the preference

shares, less income tax, 10s. per share on the ordinary shares, free of tax, and carry forward £40,913. The following are the net profits and ordinary dividends for the past five years :—

	Ordinary Dividend. Per cent.	Profits. £
1913	10½	25,295
1914	10 .. .	25,553
1915	11	26,961
1916	10 ..	[illegible]
1917	10 . .	*[illegible]

* After providing for excess profits tax, &c.

COMPANY REGISTRATIONS.

Hamilton MacLellan Syndicate, Ltd.—Capital, £27,500, in 50,000 "A" shares of 1s. each and 25,000 "B" shares of £1 each. Objects: To obtain patents and inventions to manufacture and deal in sections for ships, and to carry on the business of shipbuilders, steel makers, metal founders, &c. Agreement with J. Hamilton and W. T. MacLellan. Signatories :—

J. Hamilton, 19, Beaufort Gardens, S.W. 3, shipbuilder.
W. T. MacLellan, 86, Knightsbridge, S.W. 1, engineer.

The first directors are J. Hamilton and W. T. MacLellan. Solicitors, Hargrove and Co., 16, Victoria Street, S.W.1. Private company.

Submarine Life Saving Co. Ltd. Capital, £5,000, in 4,400 ordinary shares of £1 each and 12,000 founders' shares of 1s. each. Objects: To carry on the business of patentees of devices for submarines, shipowners, shipbrokers, financiers, &c. Signatories :—

W. W. Rae, 29, Regent Street, W. 1, surveyor.
H. F. Wilson, 25, Howley Place, Maida Hill, W., estate agent.

Permanent managing director, H. F. Wilson. Registered office, 20, Regent Street, W. Private company.

Kingston Lighter Co., Ltd.—Capital, £6,000, in £1 shares. Objects, to take over the business of a lighter owner carried on by the trustees of the late T. Wilson, at Hull, also to carry on the business of bargemen, wherry and tug owners, wharfingers, shipowners, warehousemen, &c. Signatories :—

J. W. Wilson, Glenholm, Beverley Road, Hessle, lighter owners' manager.
Lt. G. E. Sykes, R.G.A., Glenwood, South Street, Cottingham, Hull, solicitor's c[illegible].

The first directors are J. W. Wilson, Lieut. G. E. Sykes and R. T. Tindall. Secretary, R. Webb. Registered office, 8, Trinity House Lane, Hull. Private company.

Marine Appliances, Ltd. Capital, £5,000, in £1 shares. Objects, to take over an invention for promoting the circulation of water in steam generators for marine purposes, &c. Agreement with H. D. Knight. Signatories :—

F. E. Jones, Eden Lodge, Beckenham, Kent, solicitor.
F. Worham, 7, Laurence Pountney Hill, E.C., clerk.

The first directors are P. C. Ayers, F. E. Jones and J. P. O'Donnell. Secretary, H. Irsling. Registered office, 39, Victoria Street, S.W. 1. Private company.

W. and D. Conveyor Engineering Co., Ltd.—Capital, £10,000, in £1 shares. Objects, manufacturers of and dealers in labour-saving machinery in connection with the transport of goods, runways of all kinds, elevating machinery, humpers, stackers and conveyors, electrical and general engineers, &c. Signatories :—

H. O. King, Redlands, Badyr, near Cardiff, shipowner.
M. Fletcher, 31, Great St. Helens, E.C., Lloyd's broker.
W. H. Weguelin, Balholm, Chorley Wood, Herts., engineer.
W. E. P. Doudney, 33, Playfield Crescent, East Dulwich, S.E., engineer.

First directors are H. O. King, T. Fletcher, W. H. Weguelin, W. E. P. Doudney and C. H. Bennett. Solicitors, Downings, Crosby Buildings, E.C. Private company.

Johnson's Convertible Boats & Rafts, Ltd.—Capital, £3,000, in £1 shares. Objects, to acquire from S. M. Johnson his interest in Patent 13,687 of 1917 relating to convertible rafts and the like, and 13,523 of 1917, relating to convertible life boats, rafts and the like. Signatories :—

E. Le Ray, 170, Newport Road, Cardiff, shipbroker.
P. Fairweather, Exeter House, Cornwall Road, [illegible] agent.
M. Smith-Petersen, 87, Bute Street, Cardiff, shipowner.
M. Wideman, 55, Mount Stuart Square, Cardiff, shipowner.
E. Hain, 1, Despenser Gardens, Cardiff, master mariner.
H. Rowles, 10, Despenser Gardens, Cardiff, dock pilot.
S. M. Johnson, 15, Neville Street, Cardiff, commercial traveller.

The first directors are: E. Le Ray, P. Fairweather, M. Smith-Petersen, M. Wideman, E. Hain, H. Rowles and S. M. Johnson. Registered office: 92, Queen Street, Cardiff. Private company.

NEWS PARAGRAPHS.

Milford Docks Company.—The business of the Milford Docks Company will be carried on in future at 6, Queen Anne's Gate, Westminster, S.W.1.

Trade After the War.—It is stated that American shipyards will be kept in full operation for the next 10 years in order to provide the immense fleet needed for international trade after the war. For the first time in 60 years American shipyards are said to be equalling British shipyards in output.

Gift from Shipping Federation, Ltd.—At a recent meeting of the Executive Council of The Shipping Federation, Ltd., it was resolved, as a mark of their appreciation of the steadfastness and endurance shown by the men of the British Mercantile Marine under conditions of exceptional trial during the war, to make a donation of £10,000 to King George's Fund for Sailors.

Another Shipping Deal.—It is reported that the P. and O. and British India Companies have acquired the business of James Nourse, Ltd., owning a fleet of six steamers, representating about 23,500 tons gross. The vessels are employed in the trade between Calcutta and the islands of the South Pacific. It is understood that the business will be maintained as a separate organisation. This is the second shipping line taken over by the P. and O. and British India Companies within the past few weeks.

The National Ships.—In the House of Commons last week Mr. G. Terrell asked how the Government proposed to run the ships constructed in the new national shipyards. Was it proposed that they should be run after the war by the Government in competition with privately-owned ships, or were they to be sold to outside owners? Sir L. C. Money, in reply, said he was not aware of any reason for distinguishing between ships built in national shipyards and ships built for the Government in private shipyards, and it was not proposed to make any such distinction. As to the *post-bellum* use of the ships, that was a wide question, and he must ask for notice.

Standard Shipbuilding Company and Beachley Docks.—In a written answer to questions by Mr. Rendall relating to the Standard Shipbuilding and Engineering Company, of Chepstow, and the construction of docks at Beachley, Dr. Macnamara says that the land and plant of the company are being purchased outright by the Government. No agreement of any kind has been made as to the disposition of the property after the war. Dr. Macnamara also says that there is no intention on the part of the Government to build graving docks at Beachley, but the construction of a shipyard is being proceeded with. No decision has been arrived at as to what will be done with the National shipyards at the close of the present emergency, and no agreement has been made to hand back the property to the Standard Shipbuilding Company.

Proper Manning of Vessels.—On November 22, a deputation from the Trade Union Congress Parliamentary Committee to Sir Albert Stanley, at the Board of Trade, submitted resolutions passed at the recent Congress at Blackpool on the proper manning of vessels. The opinion was expressed in the resolutions that the only way to safeguard the lives of passengers and crews carried on ships was by insisting on legislation being passed calling for a proper scheme of manning vessels with crews of efficient and qualified boatmen. A protest was entered against taking competent certificated boat handlers out of ships and replacing them by unfit substitutes, which, it was alleged, had resulted in unnecessary loss of life on passenger, cargo and transport vessels. Sir Albert Stanley gave a sympathetic hearing to the deputation, and promised to consult the War Office authorities on the matter.

Leaving Certificates.—Mr. Kellaway, the Secretary to the Ministry of Munitions, on Monday made a statement in the House of Commons on the effect of the abolition of leaving certificates under the Munitions of War Act, 1915. There had, he said, been no widespread and abnormal movement of labour since October 15. In certain skilled occupations, more especially amongst tool men, considerable movement had taken place. The application for transfers in shipyards had been very low. There was a tendency in some quarters for men to use their freedom as a lever for securing higher wages. The bonus of 12½ per cent. to men engaged on time in munitions work had had a marked effect in receiving the movement of labour. On the whole, it might be said that the abolition of the

leaving certificate had not been attended by evil consequences to the extent anticipated, but an undoubted cause of discontent and unrest amongst munition workers had been removed.

U.S. Contracts for New Vessels.—A Reuter message from Washington states that the Shipping Board announces that contracts have been entered into for tonnage exceeding 4,000,000 tons, comprising 345 steel, 58 composite, and 275 wooden vessels.

Cape Farmers to Buy a Ship. It is reported from South Africa that the wool growers in one of the Cape districts are combining to buy a vessel for the shipment of the staple, so as to be independent of any outside shipping. It is said that subscriptions have been coming in plentifully.

Dockyard Workers' Increased Wages.—The Secretary of the Government Labourers' Union at Portsmouth states that a telegram has been received at Chatham Dockyard from the Admiralty stating that all adult munition workers on plain time rates in H.M. Dockyard are to receive 12½ per cent. increase on present time rates.

Return of Losses by Submarine.—Dr. Macnamara, the Secretary to the Admiralty, strongly protested in the House of Commons last week against the suggestion that the weekly returns of losses of ships by the action of enemy submarines and mines were inaccurate. The return was a true return. It did not include damaged ships, because many of them returned to service after being repaired.

New U.S. Merchant Fleet.—A Reuter message from Washington states that the launching last week of an 8,800-ton steel ship at a Pacific coast shipyard marks the completion of the first of the merchant fleet which the United States Government is building. Others will be launched in accordance with a regular programme from now on, including three 26,400-ton steel ships and three 10,500-ton wooden ships in December.

Remarkable Ship-Repair Job.—A unique ship-repairing job has just been carried out at Milford Haven. A steamer of 6,288 tons, having sustained a broken back and almost cut in halves amidships, was salved by the Salvage Association, and, after temporary repairs, taken into Milford Dry Dock. Mr. Frank Shearman, of the firm of John Shearman & Co., Ltd., took the matter in hand, and in about six weeks the vessel had been lifted bodily, after which, in a few hours, the keel was lifted, straightened, and returned into position.

Cruiser Sterns.—The cruiser stern is in high favour in Swedish yards. The Eriksberg Mek Verkstad has lately built several vessels on this principle for use between the North Sea and the Vanern Sea, these vessels being only of 1,000 tons deadweight capacity. Several medium-sized cargo vessels by the Gota Werke have also cruiser sterns, and so has a 6,500-ton motor ship delivered early this year to Norway. On smaller vessels plying in Swedish waters the cruiser stern offers the advantage of providing a certain protection to the rudder and screw against ice.

Japanese Steamers Sold.—Up to a few weeks ago, it was estimated that of vessels of 1,000 tons and over, 28, aggregating 124,244 tons, had been sold to the Allies and neutrals since the war began, in addition to a very large number chartered. The sales were :—

Country	Vessels	Tons.
Norway	7	[illegible]
Spain	3	9,902
Great Britain	9	48,167
France	6	18,270
Italy	2	9,191
United States	1	[illegible]

Shipbuilding Developments in Australia.—H.M. Trade Commissioner in the Commonwealth (Mr. G. T. Milne) states that the Federal Government has authorised the preparation of a slip at the State shipbuilding yard at Williamstown, Victoria, for the construction of a 3,000-ton standard vessel, the Federal authorities supplying the material; also, that the manager of the Commonwealth Naval Dockyard at Cockatoo Island, Sydney, has been investigating the possibility of shipbuilding being undertaken in Tasmania; engines and their parts, he is reported to have stated, could be built in Launceston, and the iron foundries there could, with the addition of some essential machinery, readily cope with the class of work required, while, with regard to labour, there was reason to believe that skilled mechanics in [illegible] could be rolled at steel works at Newcastle.

Asiatic Trade & Shipping Company, Goteborg.—This new Swedish undertaking has been established with a capital of £830,000.

Seefahrt Dampfschiffreederie, A.G.—It has been decided to raise the share capital of this company by £49,000 to £73,400 total.

Chantiers et Ateliers de St. Malo.—According to *Le Temps* this company has for its object the construction of wooden cargo vessels and sailing vessels from 500 to 3,500 tons. It is proposed to use Diesel motors developing 8 to 10 knots. A number of vessels are already under construction.

Consorzio Veneziano d'Armamento e Navigazione.—This company was founded in Venice about ten months ago for the purchase of Italian or foreign vessels of 6,000 to 7,000 tons register. Two vessels under construction by the Cantieri Navali Riuniti (Palermo) have been purchased already. The capital of the company is £2,225,000.

King George's Fund and the "Tyndareus."—At Kobe, recently, Captain Flynn, of the Blue Funnel liner *Tyndareus*, was handed 2,146 yen (about £138 12s.) to be forwarded to King George's Fund for Sailors. This amount was subscribed by British residents in Japan and their Allied friends in recognition of the courage and ready resource of Captain Flynn, his officers, and crew in handling and saving that vessel, with a battalion of the Middlesex Regiment on board, after striking a mine off Simon's Town last May. In response, Captain Flynn made generous reference to the heroic work of the engineers, who coolly carried out the orders given to them, not knowing at what moment the ship might sink.

How Many German Submarines? The *Hamburger Nachrichten* still regards the exploits of U-boats as "so extraordinarily brilliant that they will lead with certainty to the desired goal—a victorious end to the war." Concerning the number of German submarines, quotations are made from an article by Guihéneuc, in the French *Rappel*. The chief points in this article are a prophecy of revival in U-boat activity, and an estimate that about 200 U-boats are being completed each six months by Germany. The "unrestricted" U-boat offensive of February, 1917, is said to have commenced with 158 submarines, and it is estimated that 270 would be ready by the end of October, many of them being of the new cruiser type. *Hamburger Nachrichten* expresses no opinion as to the accuracy of these figures, neither does it say anything about U-boats sunk or captured.

Wages in the Shipbuilding Trade.—Mr. James O'Grady, M.P., and Mr. Wilkie, M.P., supported an application made by workers in the shipbuilding trades throughout the country to the Shipbuilding Employers' Federation, which formed the subject of arbitration proceedings before the Committee on Production last week. The skilled men claim an advance of 100 per cent. in wages, and the unskilled an increase of 10s. a week with a minimum of 50s. Proportionate rates were also asked for for piece workers, apprentices and youths. Reference was made by the employees to the invidious position in which the shipbuilding trades were placed by the recent award given to the engineers, it being customary for the award to the shipbuilding trades to be given contemporaneously with that of the engineers. After hearing evidence on both sides, Sir David Harrell, Chairman of the Committee, announced that the decision would be given in due course, after consideration had been given to the arguments put forward.

The Twelve-and-a-Half Per Cent. Bonus.—A meeting of the representatives of skilled shipyard workers was held on November 22, prior to waiting on the Committee of Production with reference to the 12½ per cent. bonus which was awarded in an Order on October 13 last by the Ministry of Munitions. The Order has now been amended. A telegram from the Ministry of Munitions addressed to Mr. Frank Smith, Secretary of the Engineers and Shipbuilding Trades Federation and Chairman of the Shipbuilding Trade Committee, was as follows:—"The 12½ per cent. bonus extended to all skilled, semi-skilled, and unskilled time-workers, and same advance or its equivalent in shipyards. Full details will be communicated later." Mr. Wilkie represented the shipyard trades, and Mr. J. Barker represented the Boilermakers. When the deputation waited upon the Committee on Production it was intimated by the employers that they had no wish to give preferential treatment to the skilled men over the unskilled. This in effect constitutes their acceptance of the new adjustment.

OFFICIAL NOTICES AND SHIPS FOR SALE.

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AUSTIN A. FARRELL, *Secretary*,
Waterford Harbour Commissioners.

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OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Wednesday.

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"SHIPBUILDING AND SHIPPING RECORD" TABLE OF SHIP SALES.

Name and Type.	Tonnage.	Dimensions. Draught in ( ).	Sold by, to	Builders, hull and year	Machinery and builders.	Remarks.
Colwith Force, ss. (well dk.)	550 gr. 220 net 740 d.w.	164½′ × 26½′ × 10½′ (12′ 10″)	West Coast Shipping Co., Liverpool, to buyers not stated	R. Williamson & Son, Workington (1906)	14, 22½, 37 × 27 (Ross & Duncan, Glasgow)	Price about £45,000.
Fordham, ss. (ex *Latchford*)	458 gr. 181 net	160′ × 24′ × 9½′ (11′ 10″)	John Harrison, Ltd., London, to buyers not stated	S. McKnight & Co., Ayr (1897)	16½, 35 × 27 (Shanks, Morrice & Co., Glasgow)	Price about £27,500.
Hav, ss. (ex *Rodny*, ex *Roald*, ex *Staincliffe*)	1,254 gr. 760 net	244′ × 32′ × 18½′	A/S. Kistranport, Bergen, to buyers not stated	M. Pearce & Co., Stockton (1877)	27½, 56 × 33 (T. Richardson & Sons, Hartlepool)	—
Hova, ss. ..	4,264 gr. 2,753 net 7,525 d.w.	380′ × 49′ × 26½′ (23′ 7″)	F. S. Holland, London, to buyers not stated	Northumberland S.B. Co., Newcastle (1910)	25, 41, 69 × 48 (N.E. Mar. Eng. Co., Newcastle)	—
Najaden, ss. (ex *Merchant Prince*)	1,586 gr. 955 net	260′ × 36½′ × 18½′ (18′ 11″)	Rederiaktieb. Neptunas, Helsingborg, to Svenska Lloyd, Gothenburg	H. S. Edwards, Son & Craig, Howden (1883)	32, 66 × 39 (N.E. Mar. Eng. Co., Gateshead)	—
Plymouth, ss. (single dk.)	5,266 gr. 3,354 net	368½′ × 55½′ × 30½′	Coastwise Transportation Co., Boston, to the American & Italian Steamship Co.	New York S.B. Co., Camden, N.J. (1915)	25, 41½, 70 × 46 (New York S.B. Co.)	Price about £400,000.
Rosyth, ss. ..	376 gr. 149 net 420 d.w.	165′ × 25′ × 11½′ (11′ 10″)	Kirkcaldy S.S. Co., Kirkcaldy, to buyers not stated	Dundee Shipbuilders Co., Dundee (1903)	15½, 25½, 41 × 33 (Cooper & Greig, Dundee)	Price about £20,000.
Segurança, ss.	4,033 gr. 2,806 net	321½′ × 45½′ × 26½′	Segurança S.S. Corpn., New York, to the Standard Commercial Co., New York	Delaware River Co., Chester, Pa. (1890)	28, 44, 70 × 48 (Delaware River Co.)	—
Southern, ss. (shelter dk.)	5,694 gr. 4,229 net 9,200 d.w.	400½′ × 52′ × 33′	Harris & Dixon, London, to buyers not stated	W. Dobson & Co., Newcastle (1916)	26, 43, 72 × 48 (N.E. Mar. Eng. Co., Newcastle)	—
Vera, ss. ..	1,222 gr. 670 net	220′ × 32′ × 16′	Dumpskibs. Aktie. "International," Christiania, to buyers not stated	Akt. Burmeister & Wain, Copenhagen (1903)	19½, 31½, 55 × 36 (Akt. Burmeister & Wain)	—

Ships for Great Britain.—The Port Arthur (Ontario) Shipbuilding Company has received orders for the building of ships to the value of $2,000,000 in addition to the large contracts already placed. At the present time there are 1,400 men working in the dry docks. Orders have been placed in Canada by this country for 22 steel vessels of tonnage from 3,400 to 8,800. Eight more are under consideration. The total tonnage now under consideration is 150,000. The vessels are for transportation of food and other supplies, and are to be launched this year or early in 1918. The question of large orders for wooden ships to the value of $10,000,000 is also under consideration.

Dutch Shipbuilding in 1917.—In spite of the great difficulty in obtaining material, Dutch yards completed a greater number of new vessels during the first half of 1917 than during the corresponding period in 1916. Dutch-built vessels added to the shipping register during the first six months of this year, were: 23 steamships (2,160,000 cub. ft.), and 13 sailing vessels (361,000 cub. ft.), compared with 16 steamships (1,435,000 cub. ft.), and 8 sailing vessels (162,000 cub. ft.) for the first six months of 1916. It is many years since there was such a large increase in the figures for new sailing vessels, but it must be remembered that the above figures include motor-auxiliary vessels. The only foreign-built tonnage added to the Dutch mercantile marine during the first half of this year was one steamship of 324,000 cub. ft., and one sailing vessel of 15,300 cub. ft.—both old vessels.

FORTHCOMING EVENTS.

INSTITUTION OF ELECTRICAL ENGINEERS.—Thursday, December 6, meeting at the Institution of Civil Engineers, Great George Street, Westminster, S.W., at 6 p.m. Mr. W. A. Gillott, A.M., on "Electrical Cooking as Applied to Large Kitchens."

INSTITUTE OF MARINE ENGINEERS.—Tuesday, December 4, meeting at the Institute, the Minories, Tower Hill, London, E.C. Subject: "Corrosion in Marine Boilers," by the late D. E. Rees (member).

LIVERPOOL ENGINEERING SOCIETY.—Wednesday, December 5, Mr. E. Jones, on the "High Efficiency Air Pumps for High Vacua."

INSTITUTION OF CIVIL ENGINEERS.—Tuesday, December 4, meeting at Institute, Great George Street, Westminster, S.W., at 5.30 p.m. Mr. George Blake Walker, M.Inst.C.E., on "Recent Developments in By-Product Coking."

SHIPPING AND OTHER MEETINGS.

Nov. 30. (*Fri.*)—BARRY GRAVING DOCK & ENGINEERING CO., LTD. (Annual), Cardiff, at 12 noon.

Dec. 12. (*Wed.*)—GRAND JUNCTION CANAL (General), 21, Surrey Street, Strand, W.C., at 2 o'clock.

SHIPPING SHARE MARKET.

The stock and share markets keep strong and active, especially in the shipping and allied companies' issues. The steady advance day by day during the past few weeks is not apparent until a comparative table such as that which appears below is struck for a number of weeks past. Then it will be seen that nearly every representative share has advanced at least 25 per cent. in capital value during the month of November. Perhaps the most striking illustration of the appreciation in values generally during the past one or two months is to be found in the movement of the deferred ordinary stock of the British Steamship Investment Trust. The price has advanced from 350 at the beginning of October to 426, at which dealings took place on November 20. This company draws the greater part of its revenue from about £600,000 of steamship companies' securities (although it should not be forgotten that it also holds £800,000 of War Loan) and its position is therefore a very fair index of the general position of shipping companies from a financial point of view. The improvement has, of course, been almost entirely in the ordinary shares, and over and over again there will be found instances where the ordinary shares of a company have advanced over 20 per cent., whilst the debentures and preference shares, being fixed-interest bearing or dividend-bearing securities, have declined as a result of the general increase of interest rates on loans. It is one of the unfortunate incidents of the times that the investor should suffer whilst the more enterprising speculative investor has derived substantial advantage from the risks he has incurred in buying shipping companies' shares at a high level. A feature of the past week, apart from the demand for steamship companies' issues, has been the persistent buying of shipbuilding and iron and coal companies' shares. There are very few sellers of the former on the market, and as the result of the steady demand for the shares the dealers are putting up prices in the hope of attracting stock to the market.

SHIPPING, SHIPBUILDING, ENGINEERING AND MARINE INSURANCE SHARE LIST.

SHIPPING.

Name.	Share and paid.	Extreme quotations, 1916.	Last ann. div. % or per share.	Yield. %	Last Quotation	Rise or Fall.
	£					
African S.S.	20	33—23½	10	7⅛	28	−1
Allan Line ... ... Deb.	100	—	4	4½	92	
Anchor Line ... Cum. pref.	10	9¼—9½	5⅜	5⅝	9¼	
Do. ... ... Deb.	Stk.	105½—102⅜	4⅜	4¼	103	
Argentine Nav. ... Cum. pref.	1	19/6—11/-	Nil.	Nil.	23/3	
Do. ... ... Ord.	1	14/6—5/6	Nil.	Nil.	17/3	
Australasian Un. S. Nav. Deb.	Stk.	83½—80½	4	5	80	
Belfast Steam ... ... "A"	10 (5pd.)	—	5	5	5	
British & Argen. Nav. ... Deb.	Stk.	87½—82½	4½	5½	87	
British India Nav. ... Deb.	Stk.	94½—88¼	4½	5⅛	83	
British S.S. Invest. Trust Def.	Stk.	357—198	50*	11¾	425	+70
Do. ... ... Pref.	Stk.	108—105½	6	5⅞	104	
Do. ... ... Deb.	Stk.	79—77½	4½	6⅛	74	
Cairn Line ... ... Deb.	Bds.	99—88	5	5⅝	90½-91	
Do. ... ... Ord.	1	—	20†	8	50 -	+5/7½
Clan Line ... ... Ord.	10	32½—22½	25	5	50	+7½
Court Line ... ... Ord.	£1	42/—26/-	20	10⅔	39/-	−3/3
Cunard SS. ... ... Ord.	1	10⅞—8⅝	20*	5	80/-	+1/-
Do. ... Cum. pref.	Stk.	95—89	5	5⅛	87	+2
Do. ... ... Deb.	Stk.	99½—93½	4½	4⅝	99½	
Elder Line ... ... Deb.	Stk.	97¼—89½	4½	4⅝	103	
Elder Dempster ... Cum. pref.	1	20/6—18/1½	5⅝	6⅛	18/-	−/6
Do. ... ... Deb.	Stk.	92½—88⅜	5	5⅛	87	
Ellerman Lines ... Pref. Ord.	10	9⅛—9⅛	6¾	6¾	9⅛	+ ⅛
Do. ... Guar. pref.	10	9⅛—8⅝	4½	5¼	8⅝	−1⅛
France Fenwick ... Cum. pref.	5	98⅝—92/6	5⅜	6⅛	87/6	
Furness, Withy ... ... Ord.	1	61/3—34/3	20*	9⅛	54/-	+/6
Do. ... Cum. pref.	10	9½—7⅜	5	6⅝	8⅝	
General Steam Nav. ... Ord.	7½	12⅝—8¼	15	7⅜	22/6	
Do. ... ... Pref.	8	7⅛—6⅜	6	7⅛	16/-	
Houlder Line ... Cum. pref.	5	83/9—67/6	5⅜	6⅛	80/-	
Do. ... ... Deb.	Stk.	—	4½	4⅝	93	
Houlder Bros. ... Cum. pref.	5	—	5⅜	6¼	4	
Do. ... ... Deb.	Stk.	—	4½	5⅛	82	
India Gen. Nav. & Rly. ... Ord.	10	12—8⅜	6	5⅞	11xd	+ ⅜
Indo-China N. ... Pref. Ord.	5	5⅞—90/-	6	6⅝	92/6	+2/6
Irrawaddy Flotilla	40	—	15	5⅞	116	
Khedivial Mail ... ... Ord.	1	37/—10/-	25	12¾	39/6	+1/6
Do. ... ... Pref.	5	77/6—60/6	5⅞	7⅜	75/-	+2/6
Do. ... ... Deb.	Stk.	94⅛—87⅛	4½	4⅝	95	
King Line ... ... Ord.	1	—	16*	9⅛	41/6	
Lamport & Holt ... Cum. pref.	£1	20/9—18/9	6	6	19/4½	
Leyland (F.) ... Cum. pref.	10	8½—6½	5	6⅛	8	+ ⅜
Mercantile SS. ... ... Ord.	5	18½—12	40	8	25	+3⅜
Do. ... ... Pref.	1	20/1½—20/-	5	6⅞	15/-	
Moor Line ... ... Ord.	10	—	30	13⅝	22½	
Nelson Steam Nav. ... Ord.	100	98½—97½	5	5⅛	98½	
New Zealand ... ... Ord.	£10	—	8	2⅝	32½	
Do. ... ... Deb.	Stk.	90⅜—88	4	4½	88½	− ⅛
Nitrate Producers SS. ... Ord.	5	25½—18	30	6⅛	24½	− ⅛
Do. ... Cum. pref.	5	—	5	5	5	
Oceanic Steam. Nav. ... Deb.	100	99—95⅜	4½	4⅝	96	
Orient. Stm. Nav. Co. Cum. pref.	10	9⅛—9⅛	5	5⅛	9	
Do. ... ... Deb.	100	98—91⅜	4½	5⅛	88	
P. & O. S. N. ... Cum. pref.	100	100—91	5	5⅛	93	
Do. ... ... Def.	100	349—270	18	5⅜	335	+5½
Do. ... ... Deb.	Stk.	71—69	5½	5½	63	
Prince Line	1	95/—26/-	30	5⅜	108/9	+10/7½
R.M.S.P. ... ... Ord.	100	134⅜—97½	7	6	116½xd	+3
Do. ... ... Pref.	Stk.	89⅜—76⅜	5	6	84xd	+2½
Do. ... ... Deb.	Stk.	89—86	4½	5⅜	89	−6
Shaw, Savill & Alb. Cum. pref.	5	95/—88/3	5½	5⅜	88/-	
Shell Transport ... ... Ord.	1	6—4⅜	35	6	5¼	+ ⅛
Do. ... Cum. pref.	10	10¼—9	5	5⅝	9	
Sutherland SS. Co.	£1	69/6—41/6	30	8⅜	70/-	+18/9
Union-Castle SS. Cum. pref.	10	7⅛—7	4½	6	7⅛	− ⅛
Do. ... ... Deb.	Stk.	92⅜—86⅜	4	4½	87	
West Hartlepool ... ... Pref.	10	8¼—7⅜	5½	7⅜	7⅞	

INSURANCE.

Alliance	20 (2'4 pd.)	10½—8¾	12/-	7	9⅛	
Indem. Mutual Marine	15 (3 pd.)	13½—9⅛	15/-	5	20⅞	
London Assurance	25 (12½ pd.)	52½—42½	20	6	58	− ¼
Marine Insurance	25 (15 pd.)	36¼—33⅛	45/-	6	55⅛	
Merchants' Marine Insurance ...	10 (2½ pd.)	7⅛—7⅛	10	6	9⅛	+ ⅛
N. British & Mercantile ... Ord.	25 (6¼ pd.)	34½—29	40/-	6¾	34	
Phœnix Assurance	10 (1 pd.)	7½—5¼	40	7	7⅛	
Royal Exchange Assurance ...	Stk.	189½—181	10	4½	236	+5½
Sea Insurance	10 (2 pd.)	19½—19½	10	6	27	
World Marine, Limited ...	5 (2 pd.)	61/3—35/-	5	4½	6	− ⅛

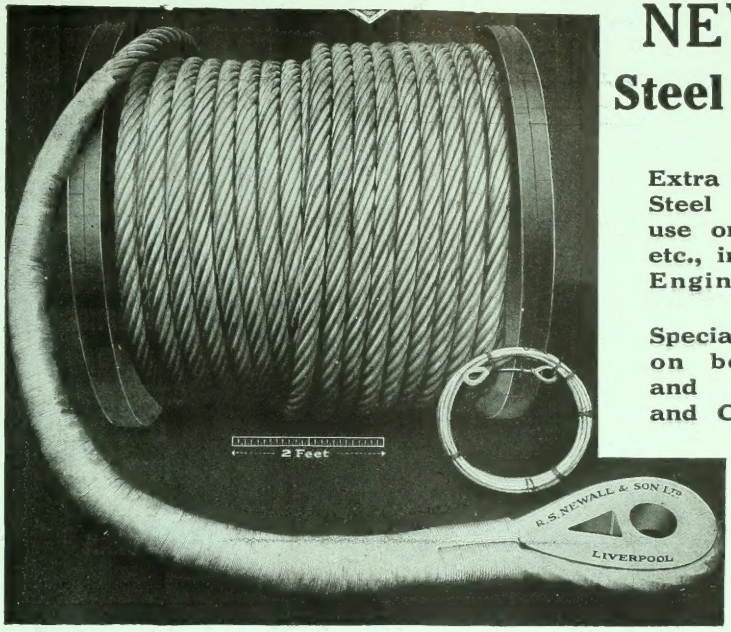
IRON AND STEEL.

Name.	Share and paid.	Extreme quotations, 1916.	Last ann. div. % or per share.	Yield. %	Last Quotation	Rise or Fall.
	£					
Babcock & Wilcox... ... Ord.	1	64/6-47/10½	15	4⅜	66/3	
Baldwins ... Cum. pref.	1	1—1	5½	5⅜	20/-	+ -/3
Do. ... ... Deb.	Stk.	87⅛—86¼	4½	5⅛	84	
Bayliss, Jones ... Cum. pref.	1	—	5	7¼	—	
Bell Bros. ... ... Cum. pref.	10	10⅜—9⅞	6	6	10	+ ⅛
Do. ... ... Deb.	Stk.	80—78½	5	6⅜	75⅜	
Bessemer (Henry) ... Ord.	1	29/—26/-	12½	7⅜	34/6	+4/9
Bolckow Vaughan ... Ord.	1	25/10⅜-18/-	11	7⅜	29/6	+1/-
Do. ... ... Cum. pref.	20	19—18	5	5⅜	17	
Cargo Fleet Iron ... ... Ord.	1	23/3-13/10½	3	3⅜	24/-	
Do. ... ... Deb.	100	86½—84	4½	5⅜	83	
Consett Iron Co. ... ... Ord.	1	89/4½—65/3	50	11	90/-	+ -/6
Dominion Iron & Steel	Bds.	83—78	5	6½	75	−1
Dorman, Long ... ... Ord.	1	36/—22/3	8†	—	46/6	+ -/9
Do. ... ... Deb.	Stk.	97⅜—97	4	5⅛	73	
Ebbw Vale Steel & Iron ... Ord.	1	28/7½—19/-	12½	9⅛	29/-	+ -/6
Guest, Keen & Nettefds ... Ord.	1	71/3—60/-	15*	3⅜	87/-	
Do. ... ... Cum. pref.	5	5⅛—5⅛	5	4⅝	5⅛	+ ⅛
Do. ... ... Deb.	Stk.	82¼—80½	4	5⅛	79	
Hadfield's Steel Foundry Ord.	1	82/6—69/-	30	5⅜	105/-	+4/6
Ibbotson Bros.	5 (4 pd.)	8—6	7½	4⅛	6½	
Jessop (W.) & Sons ... Ord.	5 (4 pd.)	9—8	15*	6⅛	9⅛	+ ⅛
Lanarkshire Steel ... Cum. pref.	10	—	5	7⅛	7	
Lysaght (J.) ... ... Cum. pref.	1	22/7½—20/3	6	6	20/-	
Do. ... ... 2nd pref.	1	21/1½—21/-	6	6	20/-	
Manganese Bronze ... ... Ord.	1	—	6	11	1⅛	
Do. ... ... Cum. pref.	1	—	6	8	⅛	
North-Eastern Steel ... Deb.	Stk.	—	4½		—	
Palmers Ship & Iron "A" ...	1	12/6—9/-	Nil.	Nil.	13/-	+2/3
Scott (Walter) ... ... Ord.	1	26/3—17/9	13	10	30/-	+5/-
Do. ... ... Pref.	1	16/10⅛—16/3	6	7⅜	19/-	
Sheffield Forge ... ... Ord.	1	—	15	4⅛	66/-	−3/-
Shelton Iron & Steel ... Ord.	1	20/4½—15/-	7½	6	24/3	+ -/4½
Do ... ... Deb.	100	94—92⅛	5	5⅜	91⅛	
S. Durham Steel & Iron Ord.	1	37/6—27/-	10	4⅛	42/-	+1/-
Do. ... ... Cum. pref.	1	21/—18/-	6	6⅛	20/-	
Do. ... ... Deb.	Stk.	82—80	4½	5⅛	80	
Steel Co. of Scotland ... Ord.	10	—	10	10	12/1/-	
Stewarts & Lloyds Pref. ord.	10	18⅜—17	10	6½	18	
Do. ... ... Cum. pref.	10	—	6	4⅜	13½	
Stone (J.) ... ... Cum. pref.	10	—	5	6⅞	8	
United States Steel ... Ord.	100$	144⅜—83⅛	8	7⅛	101⅜	−6⅛
Do. ... ... Cum. pref.	100$	128⅛—112¼	6	5⅜	113xd	−4⅜
Vickers Ltd. ... ... Ord.	1	40/3—33/6	12½	5⅛	44/-	+1/10½
Do. ... ... Pref.	Stk.	93—85	5	6	82	+1
Do. ... ... Deb.	Stk.	83—75	4	5⅜	77½xd	−1½
Weardale Steel ... Def. ord.	1	34/—19/1½	19½	13⅝	31/-	+ -/3
Do. ... ... Cum. pref.	1	23/6—17/6	6	5	24/-	+1/-
Do. ... ... Deb.	Stk.	70⅜—69½	4	6⅛	61⅜	−1⅜
Workington Iron & Steel Ord.	1	24/3—14/3	10	6⅜	29/-	+ -/6

SHIPBUILDING AND MARINE ENGINEERING.

Armstrong, Whitworth Ord.	1	43/—34/6	12½	5⅝	44/-	+3/-
Do. ... ... Cum. pref.	5	7⅝—6⅞	4	5⅛	69/-	
Do. ... ... Deb.	Stk.	80½—75	5	6⅜	77	
Beardmore (W.) ... ... Deb.	100	99—92	4½	5	91	
Brown (John) ... ... Ord.	1 (15s. pd.)	27/3—20/6	12½	7⅛	28/-	+ -/6
Do. ... ... Cum. pref.	10	10—5⅞	5	5¼	8⅝	
Cammell Laird ... ... Ord.	5	7—98	10	7⅛	7	+ ⅛
Do. ... ... Cum. pref.	5	88⅞—76⅜	5	6⅜	82/6	
Do. ... ... Deb.	100	93⅛—85	4½	5⅜	81	
Dunlop (Jas.) ... ... Ord.	1	19/7⅛-13/4½	10	9¼	21/6	
Do. ... ... Cum. pref.	1	17/1⅛-16/4½	6	7⅛	17/6	
Fairfield Shipbldg Cum. pref.	10	8⅛—8⅝	6	7⅛	8⅜	
Fleming & Ferguson ... Ord.	10	—	10	7	14½	
Gray (Wm.) ... ... Deb.	100	100¼—99¼	4½	4⅝	100¼	
Hawthorn (R. & W.) Leslie Ord.	10	15⅜—14	12½	5	25	+2
Henderson (D. & W.) Cum. pref.	1	—	5	9	9⅛	
Richardsons Westgarth ... Ord.	1	7/9—2/10½	Nil.	Nil.	9/6	+3/1½
Do. ... ... Cum. pref.	1	15/7½—8/-	Nil.	Nil.	18/3	+2/3
Do. ... ... Deb.	Stk.	69—67½	4½	6⅞	66	+1
Simons (W.) ... ... Cum. pref.	10	—	5	5	9½	
Swan, Hunter & W. R. ... Ord.	1	35/6—26/-	12½	5⅜	47/6	
Do. ... ... Cum. pref.	1	18/9—17/-	5	5⅛	17/-	
Do. ... ... Deb.	Stk.	82—80⅜	4½	5⅛	78	
Thornycroft (John I.) ... Ord.	1	38/9—21/9	17½	8⅜	40/-	
Do. ... ... Cum. pref.	1	18/6—16/3	6	6⅜	18/-	+ -/6
Do. ... ... Deb.	100	95⅜—88	5	5⅝	85	
Wallsend Slipway ... ... Ord.	1	2—1⅛	10	5	2	
Do. ... ... Cum. pref.	1	1—1	5	5	1	

* Including bonus. † Also 20 % in shares. ‡ Treasury price.



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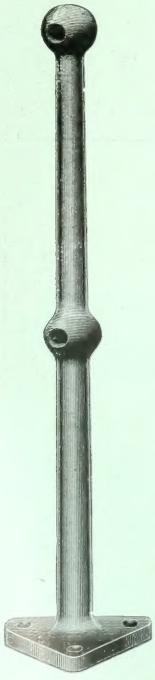

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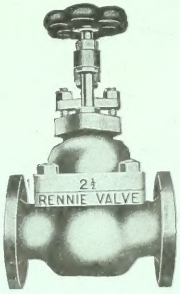

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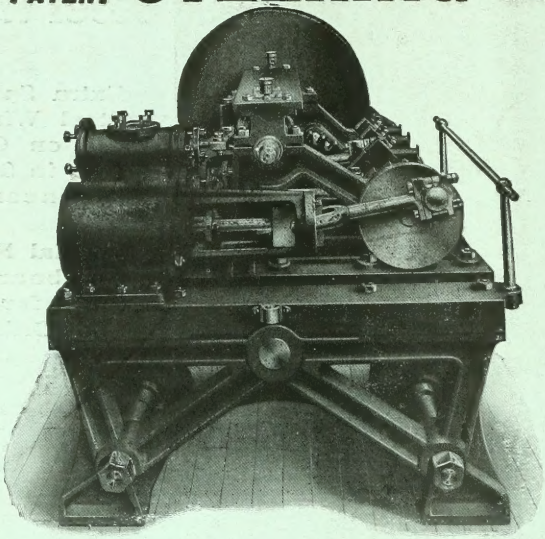

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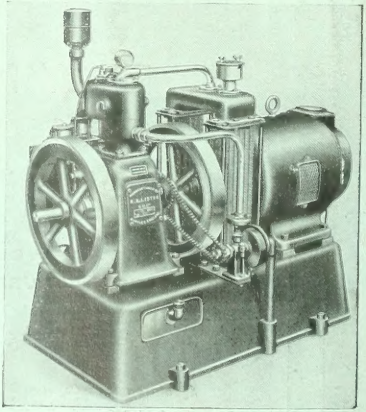

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